

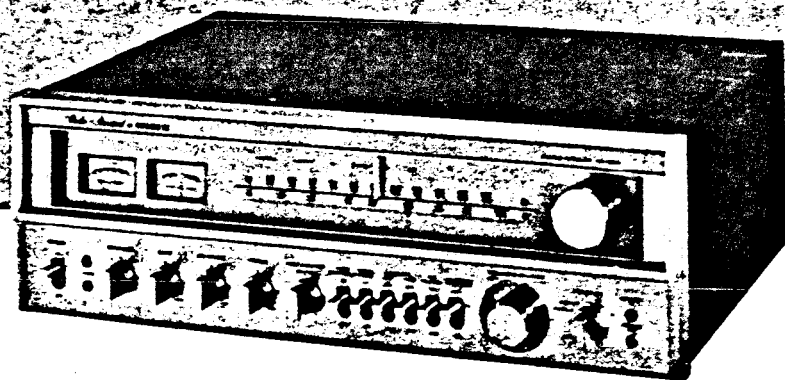
**SERVICE MANUAL**



**FISHER**

**RS-1058**

**Stereo Receiver**  
**(EUROPE)**



*FIRST NAME IN HIGH FIDELITY*

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## DISASSEMBLY INSTRUCTIONS

### Removal of Chassis from Cabinet

1. Remove 4 screws from left and right sides of cabinet.
2. Separate cabinet from chassis.
3. Remove 18 screws from bottom of cabinet. (Do Not Remove Leg From Bottom Of Cabinet).
4. Separate bottom of cabinet from chassis.

### Removal of Front Panel Assembly

1. Remove all Knobs
2. Remove 4 screws from top of panel.
3. Remove 5 screws from bottom of Panel.
4. Remove nut from "Function", "Speaker" and "Tape monitor" switches located on Front Panel Assembly.
5. Separate Front Panel Assembly from chassis.

### Removal of Meters

1. Remove One screw and Meter Cover.
2. Unsolder leads from meter terminals.
3. Grasp Meter firmly and pull back separating Meter from panel.

### Removal of Slide Rail Pointer

1. Remove Metal Slide Pointer from Slide Rail Pointer.
2. Remove 2 screws from top of Slide Rail Pointer.

### Removal of AM-FM Stereo Function Indicator Lamps

1. Grasp base of lamp with long-nosed Pliers and Carefully extract from grommet holder.
2. Unsolder AM-FM Indicator Lamp from P.C. Board.

### Removal and Replacement of Dial Lamps

1. Remove Dial P.C. Board from Shelter Light with two flaps straight.
2. Grasp Dial Lamp and extract from lamp grommet holder.

### Removal of Front End

1. Unscrew 2 screws from Drum. (Do Not Remove Dial String From Drum).
2. Remove 4 screws releasing clip holding Front End.
3. Remove 4 screws from bottom of Front End.

Testing and troubleshooting any of the P.C. boards do not require removal since all component parts are top board mounted. For underneath board inspection purposes or when a defective component is to be unsoldered and replaced, the P.C. board can be sufficiently turned over by only removing the hold down hardware. Where it necessitates complete removal of any individual board then proceed as follows.

### Removal of AM-FM RF/IF/MPX Amp P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 4 hold down screws.

### Removal of Power Amp P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 5 hold down screws.

### Removal of Power Supply P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 4 hold down screws.

### Removal of EQ-Amp P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 5 hold down screws.

### Removal of Speaker Protection P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 5 hold down screws.

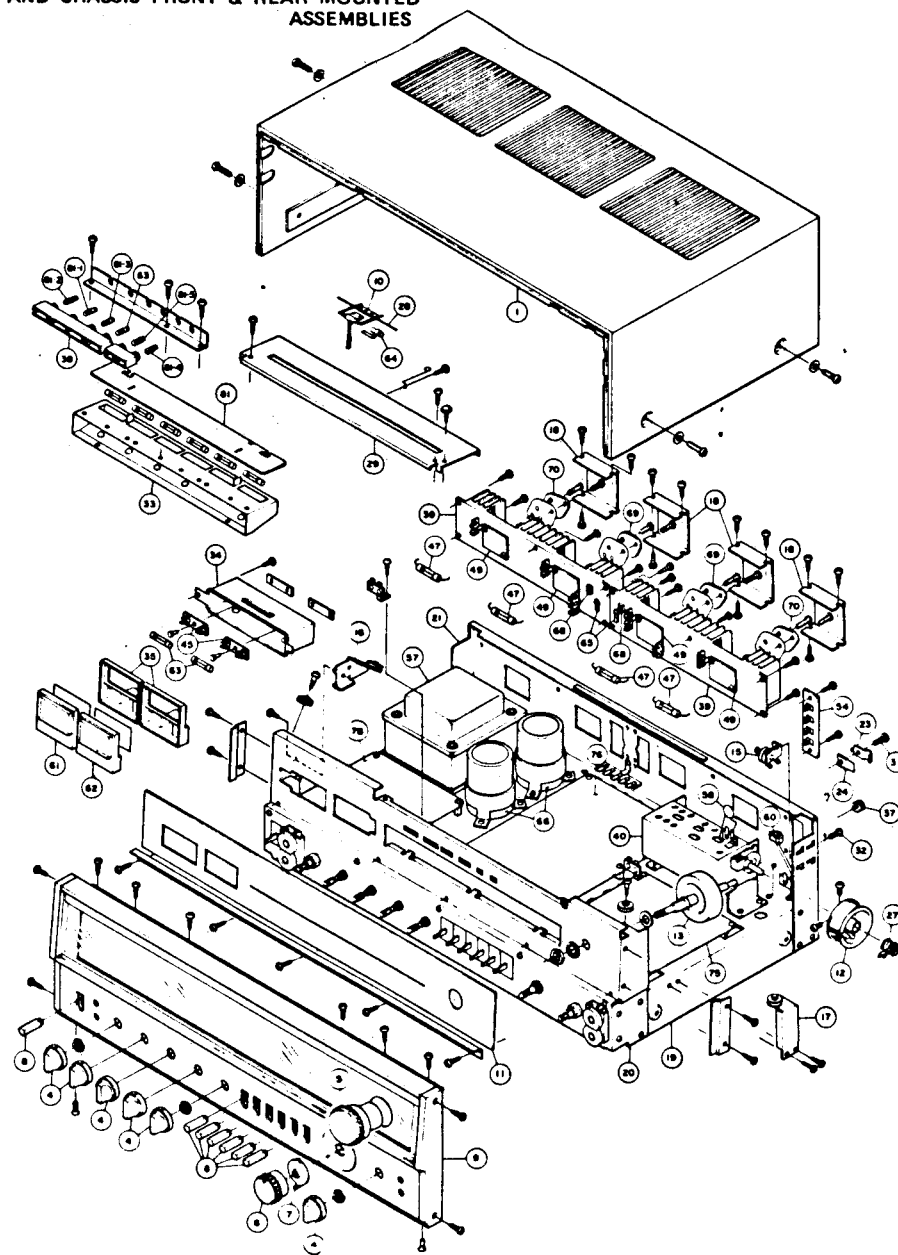
### Removal of Tone Control Amp P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 6 screws from 6 Lever switch.
3. Remove 3 nuts from variable resistors.

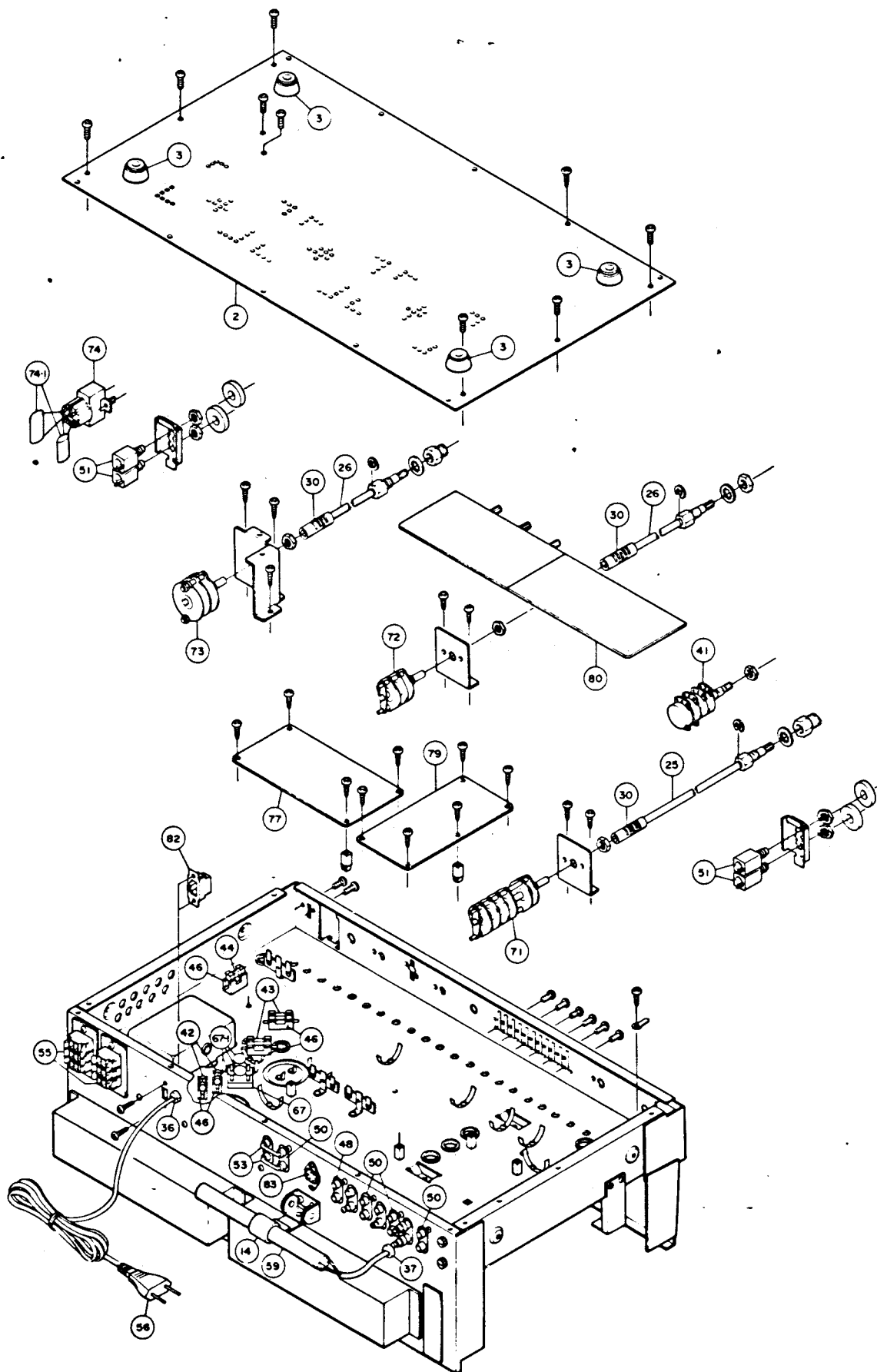
### Removal of Power Transistor (Q01~Q04)

1. Remove Cover 4 screws from top and bottom of Plate Heat Sink.
2. Remove 2 screws holding Power Transistor.

## EXPLODED VIEW OF CABINET AND CHASSIS FRONT & REAR MOUNTED ASSEMBLIES



# EXPLODED VIEW OF CHASSIS BOTTOM MOUNTED ASSEMBLIES



# PARTS LIST

## CABINET PARTS LIST

| Ref. No. | Part Number     | Description  |
|----------|-----------------|--------------|
| 1        | 1310 1101 08700 | Cabinet Assy |
| 2 *      | 1312 1105 17800 | Plate Bottom |
| 3 *      | 1312 1801 13200 | Leg          |

## APPEARANCE PARTS LIST

| Ref. No. | Part Number     | Description         |
|----------|-----------------|---------------------|
| 4        | 1310 1001 35500 | Knob, Controls      |
| 5        | 1310 1001 41500 | Knob, Tuning        |
| 6        | 1310 1001 36000 | Knob, Volume        |
| 7        | 1312 1601 40400 | Knob, Balance       |
| 8        | 1310 1001 36100 | Knob, Lever Switch  |
| 9        | 1310 3016 24900 | Panel Decorate Assy |
| 10       | 1310 3011 16800 | Dial Pointer Assy   |
| 11       | 1312 1201 28500 | Plate Dial          |

## CHASSIS PARTS LIST

| Ref. No. | Part Number     | Description                    |
|----------|-----------------|--------------------------------|
| 12       | 1310 3002 11300 | Drum Assy Tuning Gang          |
| 13       | 1310 3003 19100 | Tuning Shaft Assy              |
| 14       | 1310 3008 41702 | Support, Antenna Assy          |
| 15 *     | 1310 3020 05800 | Pulley Assy Panel Rear         |
| 16 *     | 1310 3020 07400 | Pulley Assy Panel Front (Left) |
| 17 *     | 1310 3020 07500 | Pulley Assy Chassis (Right)    |
| 18       | 1312 1410 15400 | Cover Power Transistor         |
| 19 *     | 1312 3301 21900 | Chassis                        |
| 20 *     | 1312 3305 20300 | Panel Front                    |
| 21 *     | 1312 3306 22612 | Panel Rear                     |
| 23       | 1312 3612 00400 | Clamp, 75 ohm Coax.            |
| 24       | 1312 3621 00500 | Base, Coax. Clamp              |
| 25       | 1312 4103 11400 | Metal Shaft Rotary SW (Long)   |
| 26       | 1312 4103 11500 | Metal Shaft Rotary SW (Short)  |
| 27       | 1312 4111 00400 | Tension Spring                 |
| 28       | 1312 4112 10200 | Dial Cord                      |
| 29       | 1312 4120 11700 | Slide Rail Dial Pointer        |
| 30       | 1312 4121 00100 | Coupling (Nylon)               |
| 31       | 1312 4201 12701 | Screw, Panel Rear              |
| 32       | 1312 4201 15400 | Screw, Panel Rear (Ground)     |
| 33       | 1312 6110 23701 | Housing, Dial Lamp P.C.B.      |
| 34       | 1312 6110 26100 | Housing, Meter Lamp            |
| 35       | 1312 6110 26200 | Housing, Meter                 |
| 36       | 1312 6111 14200 | Bushing, Line Cord             |
| 37       | 1312 6111 14200 | Bushing, AM Antenna Lead       |
| 38       | 1312 6111 19800 | Housing, Stereo Beacon Lamp    |
| 39       | 1312 6201 23200 | Heat Sink                      |

## ELECTRICAL PARTS LIST

| Ref. No.   | Part Number  | Description            |
|--|--------------|------------------------|
| 40   | 4 1259 20390 | Front End              |
| (Component parts used in Front End are not serviceable and available.) |              |                        |
| 41   | 4 2229 25490 | VR A-50k, MN-250k      |
| 42   | 4 2349 21570 | Fuse 6.3AT (+, -B)     |
| 43   | 4 2349 20380 | Fuse 1.0AT (+, -20V)   |
| 44   | 4 2349 20590 | Fuse 4.0AT (6.3V)      |
| 45   | 4 2359 20160 | Holder Lamp            |
| 46   | 4 2359 21021 | Fuse Holder            |
| 47   | 4 2349 21380 | Fuse 5AT (+, -B Power) |
| 48   | 4 2359 22130 | RCA Pin Jack 2P        |
| 49   | 4 2359 22440 | Socket Transistor      |
| 50   | 4 2359 22710 | Socket 4P              |
| 51   | 4 2359 22730 | Socket 1P              |

## ELECTRICAL PARTS LIST

| Ref. No.       | Part Number     | Description  |
|----------------|-----------------|--|
| 52             | 4 2369 20561    | Plug 1P  |
| 53             | 4 2369 21220    | Short Plug   |
| 54             | 4 2379 21460    | Terminal, Antenna Connector                          |
| 55             | 4 2379 21570    | Terminal, Speakers Connector                         |
| 56 *           | 4 2439 20521    | Power Cord   |
| 57 (T-1)       | 4 2519 24101    | Power Trans  |
| 58             | 4 2539 20430    | Peaking Coil 10 $\mu$ H (L01)                        |
| 59             | 4 2579 25040    | AM Antenna   |
| 60             | 4 2599 20300    | Balun  |
| 61             | 4 5119 20670    | Meter Signal Strength                                |
| 62             | 4 5119 20680    | Meter, Center of Channel                             |
| 63             | 4 6129 20280    | Pilot Lamp 6.3V 250mA                                |
| 64             | 4 6129 20592    | Small Lamp Indicator 5V 60mA                         |
| 65             | H11-PTH487A-BE  | Posistor Protector                                   |
| R15            | R2HCPK222A      | Resistor Solid 2.2k ohm 1/2W $\pm 10\%$              |
| 66             | 4 2239 21160    | Capacitor Electrolytic 15000 $\mu$ F 63V             |
| (C02,03)       |                 |  |
| C08            | C1CRE-227A      | Cap. Electrolytic 220 $\mu$ F 16V                    |
| C09            | C1EUEM475A      | Cap. Alsicon 4.7 $\mu$ F 25V $\pm 20\%$              |
| C10            | C1HYDZ 473A     | Cap. Ceramic 0.047 $\mu$ F 50V +80, -20%             |
| C11            | C1HFRM104A      | Cap. Mylar 0.1 $\mu$ F 50V $\pm 20\%$                |
| 67             | DDD-S5VB20      | Diode S5VB20 (Power Supply)                          |
| 67-1           | C2HYDP103A      | Cap. Ceramic 0.01 $\mu$ F 500V +100, -0%             |
| (C04,05 06,07) |                 |  |
| 68             | DAA-STV-3H-W    | Diode STV-3H (Idling Bias)                           |
| 69             | TNN-2SD287A-Q   | TR 2SD287A-Q   |
| (Q01,02)       |                 |  |
| 70             | TNN-2SB539A-Q   | TR 2SB539A-Q   |
| (Q03,04)       |                 |  |
| R03, 04        | R3DXPK561A      | Resistor Oxide Metal Film 560 ohm 2W $\pm 10\%$      |
| R05,06         | R2HXPk151A      | Resistor Oxide Metal Film 150 ohm 1/2W $\pm 10\%$    |
| R07,08         | R2EDPJ274A      | Resistor Solid 270K 1/4W $\pm 5\%$                   |
| R09,10         | R3DXPK56A       | Resistor Oxide Metal Film 560 ohm 2W $\pm 10\%$      |
| R11,12         | R2HXPk151A      | Resistor Oxide Metal Film 150 ohm 1/2W $\pm 10\%$    |
| R13,14         | R3DXPK100A      | Resistor Oxide Metal Film 10 ohm 2W $\pm 10\%$       |
| 71 (S-01)      | 4 2319 34150    | Switch Rotary Function                               |
| 72 (S-02)      | 4 2319 34130    | Switch Rotary Tape Monitor                           |
| 73 (S-09)      | 4 2319 34140    | Switch Rotary Speaker                                |
| 74 (S-10)      | 4 2312 00150    | Switch Lever Power                                   |
| 74-1           | C2EHRM103A      | Capacitor Polypropylene 0.01 $\mu$ F 250V $\pm 20\%$ |
| (C01)          |                 |  |
| 75 *           | 1310 4001 72700 | AM, FM RF/IF MPX PC Assy                             |
| 76 *           | 1310 4001 72803 | Power AMP PC Assy                                    |
| 77 *           | 1310 4001 72900 | Protector PC Assy                                    |
| 78 *           | 1310 4001 73002 | Power Supply PC Assy                                 |
| 79 *           | 1310 4001 73101 | EQ PC Assy   |
| 80 *           | 1310 4001 74900 | Pre Tone PC Assy                                     |
| 81 *           | 1310 4001 72163 | Dial Lamp PC Assy                                    |
| 82             | 4 2319 21531    | Slide Switch, Volt Select                            |
| 83             | 4 2359 20190    | Din Socket   |

NOTE: \* Asterisk indicates not a service part.

## RECOMMENDED TEST EQUIPMENT

The following test equipment is recommended to completely test and align the Receiver.

- Line Voltage Isolation Transformer.
- AC DC Multimeter.
- Accurately Calibrated AC Voltmeter.
- Oscilloscope (Flat to 100 KHz Minimum)
- Low-Distortion Audio Sine-Wave Generator
- Harmonic Distortion Analyzer
- Two (2) Load Resistors, 8-ohms, 250 Watts (Minimum Rating)
- Low-Distortion AM-FM Signal Generator
- 10.7 MHz Sweep Generator
- Multiplex Generator
- 455 KHz Sweep Generator

## HARMONIC DISTORTION TEST

CAUTION: Limit the following tests to no more than ten minutes each. Use 8-ohm resistors with a minimum power rating of 250 watts when connecting a load across the SPEAKERS terminals.

### CONTROL SETTINGS:

Unplug the AC power cord and set the front panel controls as follows.

- BASS, MID, TREBLE, and BALANCE controls to center positions
- POWER switch to OFF
- SPEAKERS switch to PHONES
- FUNCTION switch to AUX
- HIGH & LOW FILTER, MONO MODE, LOUDNESS CONTROL and TAPE MONITOR switch to OFF and SOURCE VOLUME control to MINIMUM position
- LEFT CHANNEL DRIVEN

### ONE CHANNEL DRIVEN:

- 1) Connect a low distortion audio generator to LEFT AUX IN jack. Set generator frequency to 1 KHz and output to minimum.
- 2) Connect an 8-ohm load resistor between SPEAKERS MAIN LEFT and COM terminals. Connect a Harmonic Distortion analyzer and an AC VTVM in parallel across the 8-ohm load.
- 3) Connect the AC power cord and set SPEAKERS switch to MAIN. Turn VOLUME control to MAX.
- 4) Increase generator output for RS-1058 90W RMS (26.8V across the 8-ohm load) Harmonic Distortion Analyzer should measure 0.15% distortion or less.
- 5) Repeat steps 1 through 4 for RIGHT CHANNEL.

## BOTH CHANNELS DRIVEN

Connect 8-ohm load resistors across LEFT and RIGHT MAIN SPEAKERS terminals. Push down "MONO" switch. Adjust generator output and "BALANCE" control for 90W at Left and Right Channels 26.8V across the 8-ohm loads. Harmonic Distortion Analyzer should measure 0.1% distortion or less at each channel.

## ADJUSTMENT OF THE POWER AMP. P.C. BOARD

### BEFORE ADJUSTMENT

- Disconnect the PRE OUT/MAIN IN connector.
- After the power switch is turned ON, allow a few minutes marking adjustment, to be sure of the most stable operation.
- Connect dummy load resistors (8 ohm) to the speaker terminals.
- Use DC V.T.V.M. or Circuit Tester (input impedance: More than 50k ohm/V)

### (A) IDLING CURRENT ADJUSTMENT

Adjust VR01 (VR02) for an idling current of 30mA. Measure the voltage at both sides of R65 (R66) resistor (0.47 ohm) and Adjust VR01 (VR02) to indicate 14mV - 2mV.

Note: Polarity of Emitter of Q01 (Q02) is (+) Mid-Point is (-).

- (B) a. Turn the semi-fixed variable resistor slowly during adjustment.
- b. Be careful of the polarity of each measurement point.


## Nominal Specifications For Information Only.

| RECEIVER   | RS-1058                          |
|--|----------------------------------|
| <b>POWER AMPLIFIER SECTION</b><br>Continuous RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with an 8 ohm load. | 90Wx2                            |
| Power Bandwidth  | 20Hz/20kHz                       |
| Total Harmonic Distortion  | 0.1 %                            |
| <b>PREAMPLIFIER SECTION</b><br>Input Sensitivity and Impedance<br>At rated output, 8-ohms at 1kHz<br>Phono (1 and 2)   | 2mV/ 50k ohm                     |
| Phono (max input capability)   | 180mV                            |
| Auxiliary  | 150mV/100k ohm                   |
| Tape Monitor (1 and 2)   | 150mV/100k ohm                   |
| Hum & Noise (below rated output)<br>Phono (1 and 2)  | 76 dB                            |
| Auxiliary  | 90 dB                            |
| Tape Monitor (1 and 2)   | 90 dB                            |
| Frequency Response<br>Phono (RIAA EQUALIZED $\pm 2$ dB)  | 30Hz - 15kHz                     |
| Auxiliary input $\pm 2$ dB   | 20Hz - 20kHz                     |
| Tape Monitor input $\pm 2$ dB  | 20Hz - 20kHz                     |
| Bass Control Range (at 100Hz)  | $\pm 10$ dB                      |
| Treble Control Range (at 10kHz)  | $\pm 10$ dB                      |
| Mid Range (at 1.5kHz)  | $\pm 10$ dB                      |
| Loudness Contour (at 30 dB volume attenuation)   | +8 dB at 100Hz<br>+4 dB at 10kHz |
| High Filter  | -6 dB (5kHz)                     |
| Low Filter   | -6 dB (60Hz)                     |
| Separation (Stereo) @ 1kHz   | 40 dB                            |
| <b>POWER SECTION INPUT</b>   | 150mV/100k ohm                   |
| <b>FM TUNER SECTION</b>  |                                  |
| Usable Sensitivity Mono  | 1.7 $\mu$ V/ 9.8 dBf             |
| Stereo   | 4.3 $\mu$ V/ 17.9 dBf            |
| 50 dB Quieting Sensitivity Mono  | 2.5 $\mu$ V/ 13.2 dBf            |
| Stereo   | 34 $\mu$ V/ 35.9 dBf             |
| Capture Ratio  | 0.8 dB                           |
| Alt Channel Selectivity  | 75 dB                            |
| Image Response Rejection   | 80 dB                            |
| Spurious Response Rejection  | 100 dB                           |
| AM Rejection   | 65 dB                            |
| Signal-to-Noise Ratio (Mono & Stereo)  | 75/70 dB                         |
| Total Harm. Distortion (Mono & Stereo)   | 0.15/ 0.25 %                     |
| 50 dB Quieting Sensitivity THD Mono  | 0.3 %                            |
| Stereo   | 0.4 %                            |
| Stereo Separation (1 kHz/10 kHz)   | 45/36 dB                         |
| Sub-Carrier Suppression (19/38 kHz)  | 60/70 dB                         |
| <b>AM TUNER SECTION</b>  |                                  |
| Sensitivity  | 300 $\mu$ V/m                    |
| Selectivity  | 43 dB                            |
| Signal-to-Noise Ratio  | 65 dB                            |
| Image Frequency Rejection  | 56 dB                            |
| IF Rejection   | 70 dB                            |
| <b>GENERAL SECTION</b>   |                                  |
| Power Requirements (50/60 Hz)  | 110V/220V                        |
| Power Consumption  | 600W/612VA                       |
| AC Outlets   |                                  |
| Dimensions H x W x D (Inches)  | 6-13/16" x 20-3/4" x 14-1/4"     |
| Weight (Lbs.)  | 32.4                             |

Because Fisher products are subject to continuous improvement, Fisher reserves the right to modify, change, or alter any design or specifications without notice and without incurring any obligation. Fisher reserves the right to make changes and improvements upon its products without any obligation to install such changes upon any of its products previously manufactured.



# AM-FM MULTIPLEX ALIGNMENT

## AM ALIGNMENT

| Step | Adjusting circuit   | Connection   |  | SG. frequency                        | Position of tuning dial                              | Adjustment                             | V.T.V.M. Oscilloscope  |
|------|---------------------|--|--|--------------------------------------|--|--|--|
|      |                     | Input  | Output                                       |                                      |  |  |  |
| 1    | IF                  | Connect sweep generator to VC4.  | Connect oscilloscope to test point Pin No. 8 | 455 KHz                              | Near max. capacity of VC at position with no signal. | AM 1st<br>9-21310<br>AM DET<br>9-21291 | <br>455 KHz |
| 2    | RF                  | Connect standard loop antenna to output terminal of SG.<br>Place receiver 2 feet from loop antenna | Connect V.T.V.M. to Pin No. 8                | 600 KHz<br>(400Hz, 30 % modulation)  | 600 KHz  | AM ANT<br>9-25040<br>AM OSC<br>9-20880 | Max.   |
| 3    |                     |  |  | 1400 KHz<br>(400Hz, 30 % modulation) | 1400 KHz   | TC 5<br>TC 6                           | Max.   |
| 4    | Repeat adjustments. |  |  |                                      |  |  |  |

1. Variable capacitor completely closed.
2. Set the dial pointer to very left line dial scale.
3. Connect sweep generator, SG, V.T.V.M. and oscilloscope.
4. Function switch to "AM."
5. Use a screwdriver with plastic grip for all adjustments.

## FM ALIGNMENT

| Step | Adjusting circuit   | Connection  |  | SG.frequency                      | Position of tuning dial                              | Adjustment                   | V.T.V.M. Oscilloscope   |
|------|---------------------|---|--|-----------------------------------|--|------------------------------|---|
|      |                     | Input   | Output   |                                   |  |                              |   |
| 1    | IF                  | Connect sweep generator to test point VC3 through 0.01 $\mu$ F. | Connect oscilloscope to test point TP 7 IC 02 Pin No. 13 | 10.7 MHz (none modulation)        | Near max.capacity of VC. at position with no signal. | IFT In FRONT END             | <br>10.7MHz |
| 2    | Ratio Det.          |   | Connect oscilloscope to test point TP 1                  |                                   |  | FM QUADRA TURE COIL. 9-21320 |            |
| 3    | RF                  | Connect FM SG. to FM ANT terminals.                             | Connect V.T.V.M. to speaker terminal.                    | 90 MHz (400 Hz, 30 % modulation)  | 90 MHz   | LA LR                        | Max.  |
| 4    |                     |   |  | 106 MHz (400 Hz, 30 % modulation) | 106 MHz  | TCA TCR                      | Max.  |
| 5    | Repeat adjustments. |   |  |                                   |  |                              |   |

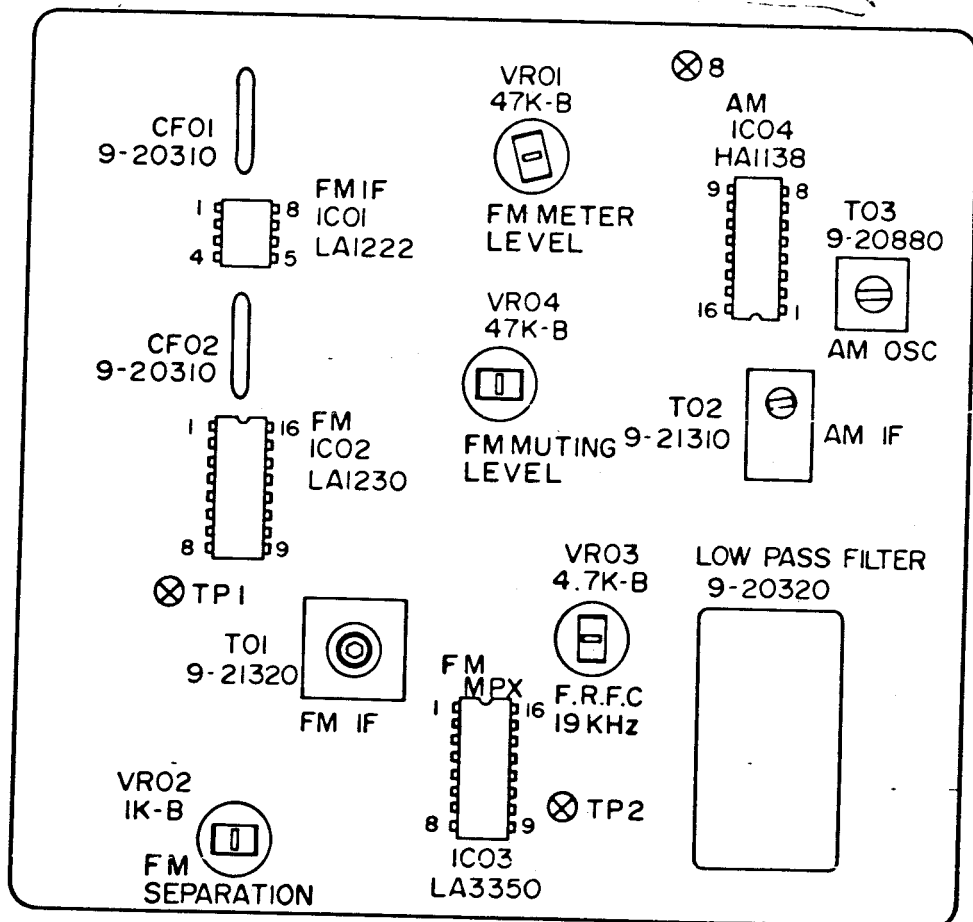
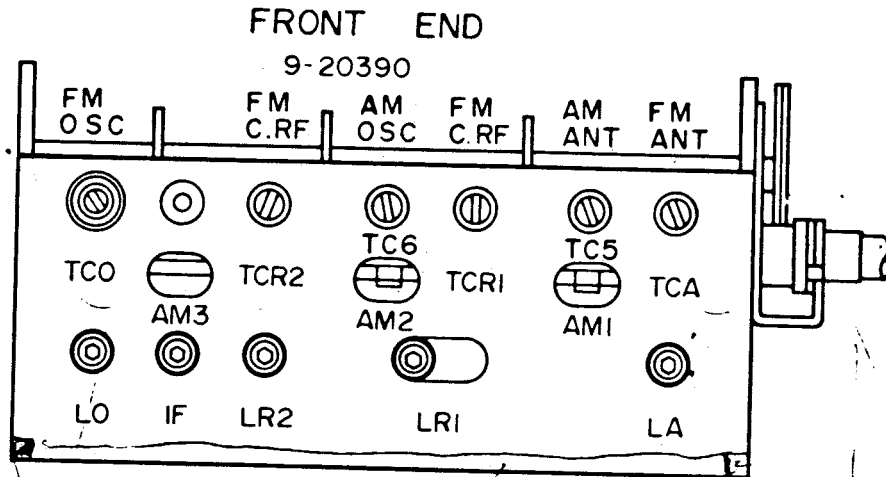
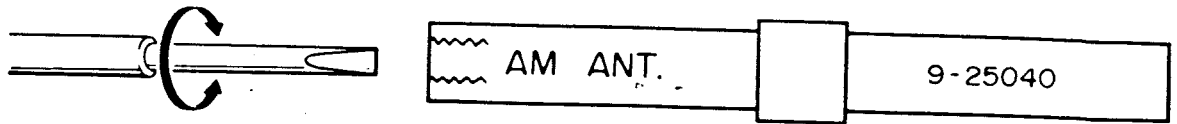
1. Variable capacitor completely closed.
2. Set the dial pointer to very left line of dial scale.
3. Connect sweep generator, FM SG, V.T.V.M. and oscilloscope. FM ANT input impedance is 300 ohm.
4. Function switch to "FM."
5. Use a screwdriver with plastic grip for all adjustments.

## FM MPX ALIGNMENT

| Step | Adjusting circuit  | Connection   |   | Position of tuning dial                               | Adjustment   |               |
|------|--|--|---|---|--|---------------|
|      |  | Input  | Output  |   |  |               |
| 1    | PLL IC<br>FO (19 KHz)<br>Adjustment                              | None   | Connect Frequency counter or synchroscope to TP 2 | Near max. capacity of VC. at position with no signal. | Adjust VR 03(4.7K-B) so that 19 KHz may be indicated on the frequency counter or synchroscope. |               |
| 2    | FM STEREO<br>Signal<br>Separation                                | Connect FM stereo SG to FM ANT terminals. 19 KHz signal ON. Main channel, sub channel signal ON. Add 1000 Hz signal from L Ch. | Connect V.T.V.M. to output terminal (R channel).  |   | VR 02 (1K-B)   | V.T.V.M. Min. |
|      |  | Connect FM stereo SG to FM ANT terminals. 19 KHz signal ON. Main channel, sub channel signal ON. Add 1000 Hz signal from R Ch. | Connect V.T.V.M. to output terminal (L channel)   |   |  |               |
| 3    | Repeat steps 1, 2, Set at position with max. channel separation. |  |   |   |  |               |

1. Variable capacitor completely closed.
2. Connect FM stereo SG and V.T.V.M.
3. Function switch to "FM"
4. Use a screwdriver with plastic grip for all adjustments.

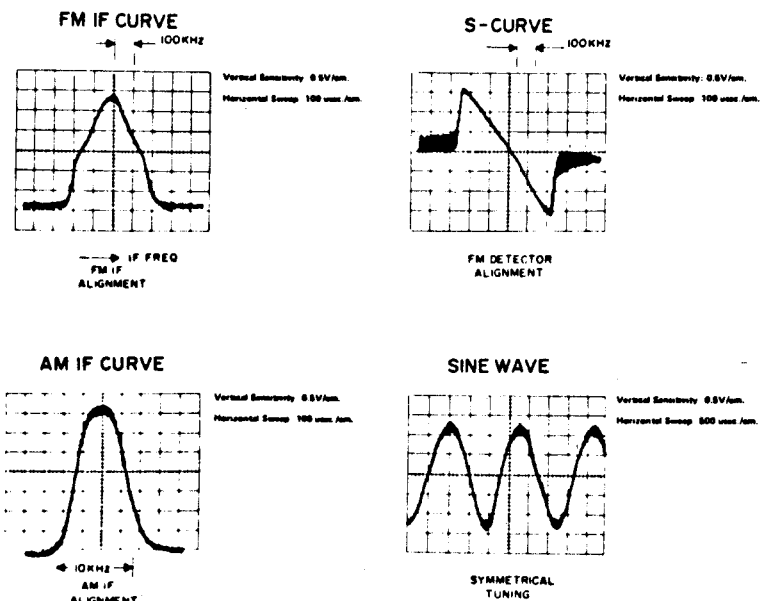
# AM-FM RF/IF MPX BOARD LAYOUT



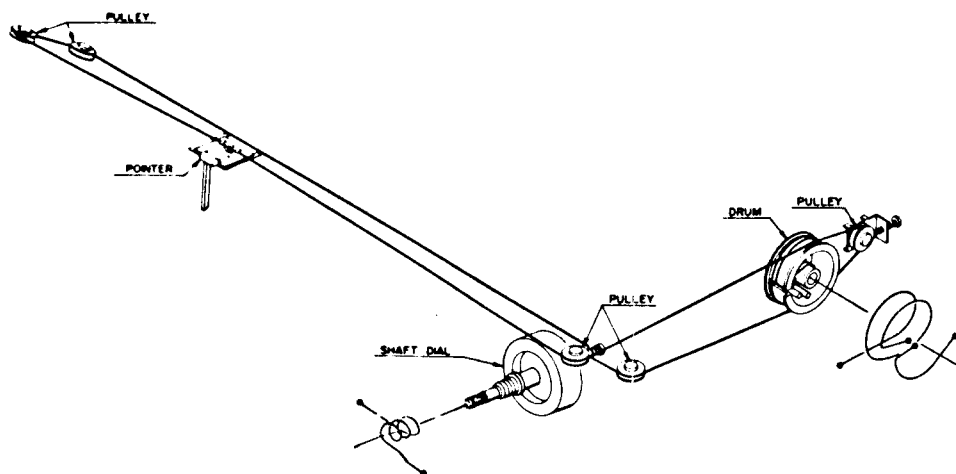


# ALIGNMENT WAVE FORMS

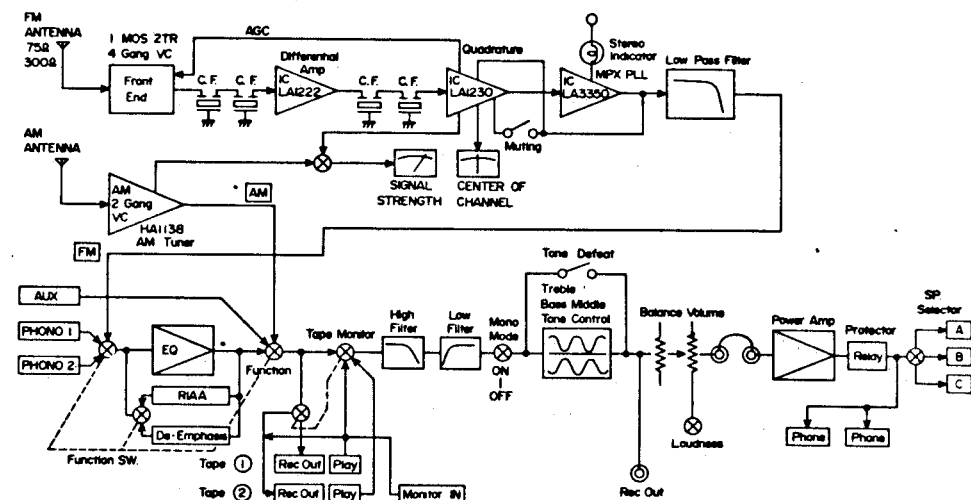
WITH OSCILLOSCOPE TIME BASE SETTINGS



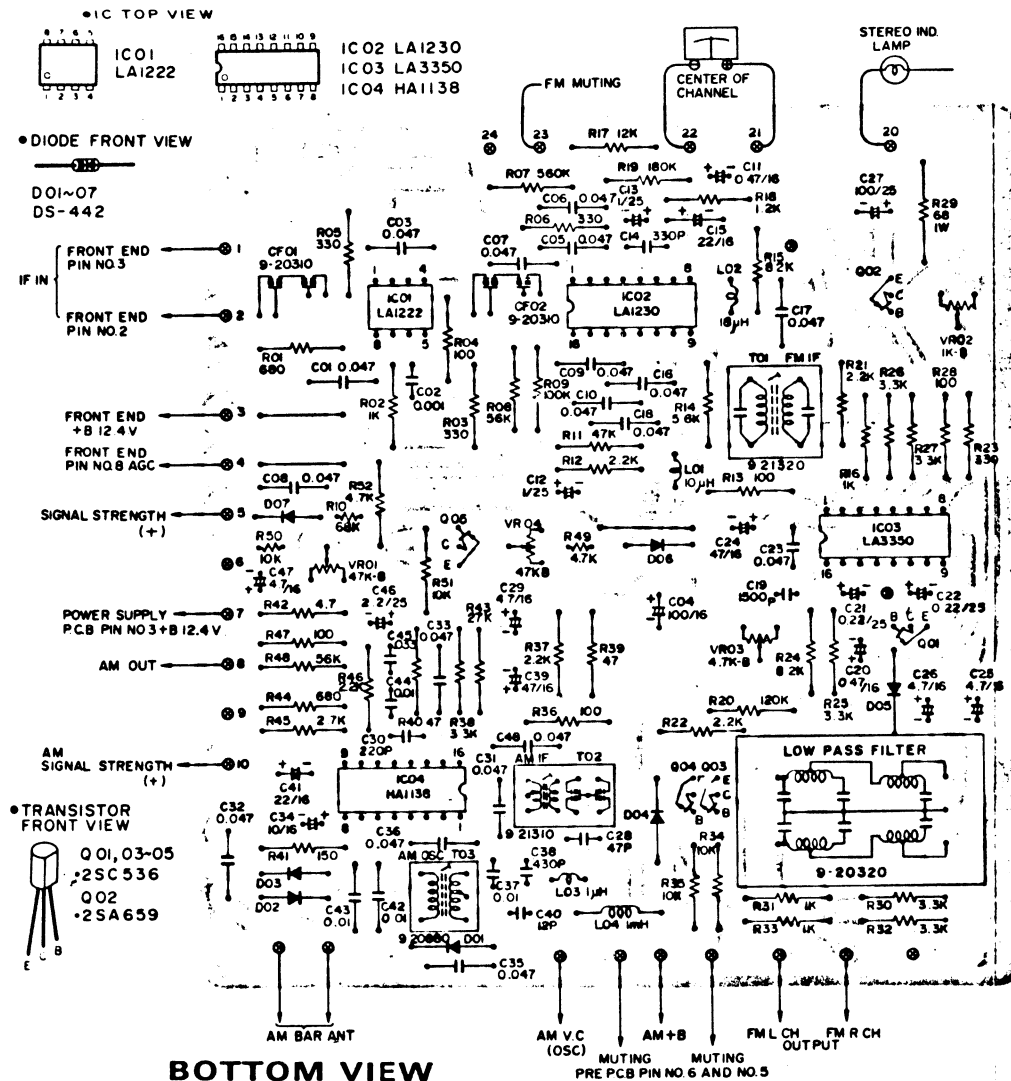
## DIAL CORD STRINGING



## BLOCK DIAGRAM



# AM FM RF/IF MPX P.C.BOARD



**BOTTOM VIEW**

|             | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| IC01 LA1222 | 1.39V | 1.39V |       | 11.5V | 12.4V | 1.35V | 9.7V  | 12.4V |       |       |       |       |       |       |       |       |
| IC02 LA1230 | 2.85V | 2.85V | 2.85V | 0V    | 0V    | 5.92V | 5.73V | 5.75V | 5.75V | 5.75V | 14.1V | 3.08V | 0.54V | 0V    | 5.13V | 0V    |
| IC03 LA3350 | 10.7V | 2.74V | 4.71V | 0.08V | 0.11V | 11.6V | 0V    | 0.34V | 0.06V | 0.06V | 2.08V | 2.25V | 1.96V | 2.08V | 2.08V | 2.85V |
| IC04 HA1138 | 11.7V | 2.79V | 11.7V | 11.7V | 4.8V  | 9.86V | 2.0V  | 0.88V | 0.08V | 3.8V  | 4.3V  | 11.8V | 2.76V | 2.77V | 2.72V | 0V    |

## PARTS LIST

### AM FM RF/IF MPX PCB Assy 1310 4001 72700

| Ref. No. | Part Number  | Description                |
|----------|--------------|----------------------------|
| L01      | 4 2539 20370 | Coil 10 $\mu$ H $\pm 10\%$ |
| L02      | 4 2539 20380 | Coil 18 $\mu$ H $\pm 5\%$  |
| L03      | 4 2539 20310 | Coil 1 $\mu$ H $\pm 5\%$   |
| L04      | 4 2539 20170 | Choke Coil 1 mH            |
| T01      | 4 2569 21320 | IF Trans FM                |
| T02      | 4 2569 21310 | IF Trans AM                |
| T03      | 4 2589 20880 | OSC Coil AM                |
| VR01     | 4 2229 25100 | Semi-Fixed VR 47k-B        |
| VR02     | 4 2229 22910 | VR 1k-B                    |
| VR03     | 4 2229 23880 | VR 4.7k-B                  |
| VR04     | 4 2229 25100 | Semi-Fixed VR 47k-B        |
|          | 4 2279 20320 | Low Pass Filter            |
|          | 4 2359 23120 | Socket 16P                 |
| CF01,02  | 4 2279 20310 | Ceramic Filter             |

### CAPACITORS

|        |             |                                      |
|--------|-------------|--------------------------------------|
| C01    | C1HYSZ473A  | Ceramic 0.047 $\mu$ F 50V +80,-20 %  |
| C02    | C1HYSZJ02A  | Ceramic 0.001 $\mu$ F 50V +80,-20 %  |
| C03    | C1HYSZ473A  | Ceramic 0.047 $\mu$ F 50V +80,-20 %  |
| C04    | C1CRB-107A  | Electrolytic 100 $\mu$ F 16V         |
| C05,06 | C1HYDZ473A  | Ceramic 0.047 $\mu$ F 50V +80,-20 %  |
| C11    | C1CUEX474A  | Alsilcon 0.47 $\mu$ F 16V +40,-20 %  |
| C12,13 | C1EUM105A   | Alsilcon 1 $\mu$ F 25V $\pm 20\%$    |
| C14    | C1HCDK331SL | Ceramic 330pF 50V $\pm 10\%$         |
| C15    | C1CTRM226A  | Tantalum 22 $\mu$ F 16V $\pm 20\%$   |
| C16,17 | C1HYDZ473A  | Ceramic 0.047 $\mu$ F 50V +80,-20 %  |
| C18    |             |                                      |
| C19    | C1HSEJ152A  | Styrol 1500pF 50V $\pm 5\%$          |
| C20    | C1CUEX474A  | Alsilcon 0.47 $\mu$ F 16V +40,-20 %  |
| C21,22 | C1EUM224A   | Alsilcon 0.22 $\mu$ F 25V $\pm 20\%$ |
| C23    | C1HFRM473A  | Mylar 0.047 $\mu$ F 50V $\pm 20\%$   |
| C24    | C1CRB-476A  | Electrolytic 47 $\mu$ F 16V          |
| C25,26 | C1CUEX475A  | Alsilcon 4.7 $\mu$ F 16V +40,-20 %   |
| C27    | C1ERB-107A  | Electrolytic 100 $\mu$ F 25V         |
| C28    | C1HCSK470SL | Ceramic 47pF 50V $\pm 10\%$          |
| C29    | C1CRB-475A  | Electrolytic 4.7 $\mu$ F 16V         |
| C30    | C1HCDK221SL | Ceramic 220pF 50V $\pm 10\%$         |
| C31,32 | C1HYDZ473A  | Ceramic 0.047 $\mu$ F 50V +80,-20 %  |
| C33    |             |                                      |
| C34    | C1CRB-106A  | Electrolytic 10 $\mu$ F 16V          |
| C35,36 | C1HYDZ473A  | Ceramic 0.047 $\mu$ F 50V +80,-20 %  |
| C37    | C1HFRM103A  | Mylar 0.01 $\mu$ F 50V $\pm 20\%$    |
| C38    | C1HSEJ431A  | Styrol 430pF 50V $\pm 5\%$           |
| C39    | C1CRB-476A  | Electrolytic 47 $\mu$ F 16V          |
| C40    | C1HCDJ120SL | Ceramic 12pF 50V                     |
| C41    | C1CRB-226A  | Electrolytic 22 $\mu$ F 16V          |
| C42,43 | C1HYDZ103A  | Ceramic 0.01 $\mu$ F 50V +80,-20 %   |
| C44    | C1HFRM103A  | Mylar 0.01 $\mu$ F 50V $\pm 20\%$    |
| C45    | C1HFRM333A  | Mylar 0.033 $\mu$ F 50V $\pm 20\%$   |
| C46    | C1EUM225A   | Alsilcon 2.2 $\mu$ F 25V $\pm 20\%$  |
| C47    | C1CUEX475A  | Alsilcon 4.7 $\mu$ F 16V +40,-20 %   |
| C48    | C1HYDZ473A  | Ceramic 0.047 $\mu$ F 50V +80,-20 %  |

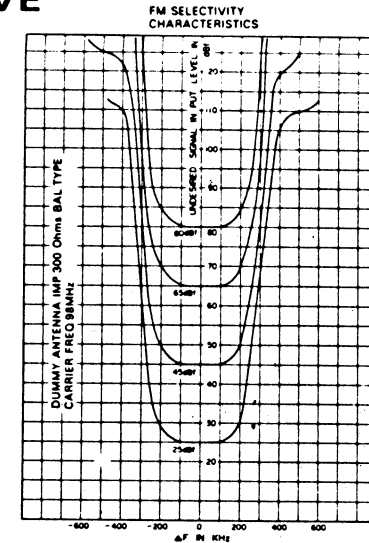
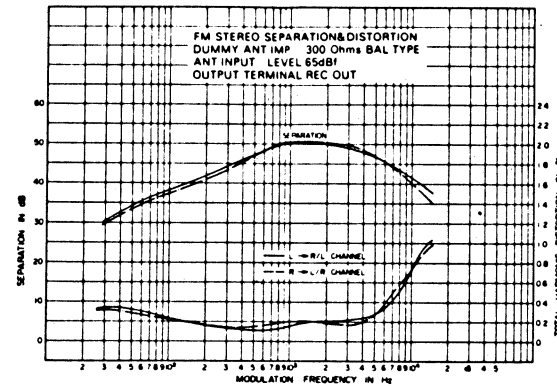
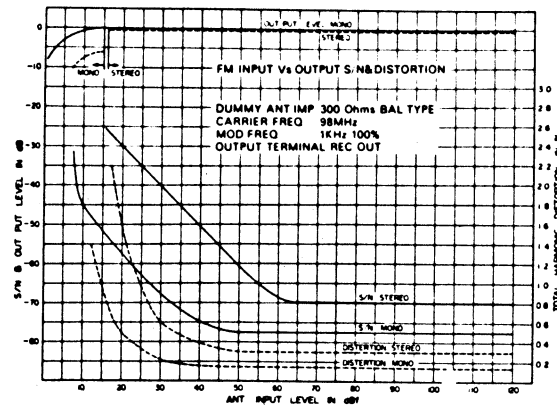
| Ref. No. | Part Number     | Description      |
|----------|-----------------|------------------|
| D01,02   | 2055 9040 44210 | Diode DS-442     |
| Q01      | 2065 0131 22210 | IC LA1222        |
| Q02      | 2065 0151 23010 | IC LA 1230       |
| Q03      | 2065 0743 35019 | IC LA-3350SS     |
| Q04      | 1KK-HA1138      | IC HA1138        |
| Q01      | 2035 5100 53640 | TR 2SC536 D or E |
| Q02      | 2035 6800 65940 | TR 2SA659 D or E |
| Q03,04   | 2035 5100 53640 | TR 2SC536 D or E |

### RESISTORS

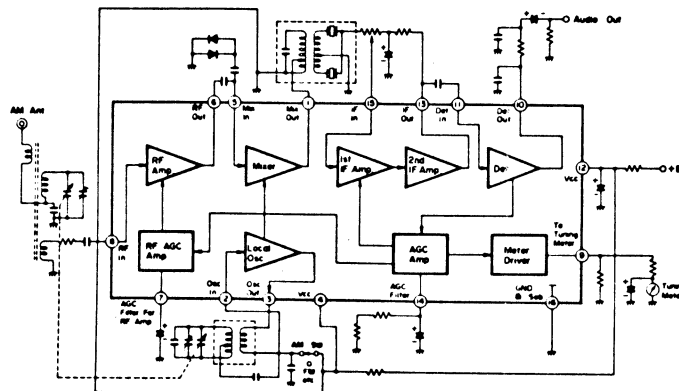
|        |            |                        |                |
|--------|------------|------------------------|----------------|
| R01    | R2EDSJ681A | Carbon 680             | 1/4W $\pm 5\%$ |
| R02    | R2EDSJ102A | Carbon 1k              | 1/4W $\pm 5\%$ |
| R03    | R2EDSJ331A | Carbon 330             | 1/4W $\pm 5\%$ |
| R04    | R2EDSJ101A | Carbon 100             | 1/4W $\pm 5\%$ |
| R05,06 | R2EDSJ331A | Carbon 330             | 1/4W $\pm 5\%$ |
| R07    | R2EDSJ564A | Carbon 560k            | 1/4W $\pm 5\%$ |
| R08    | R2EDSJ563A | Carbon 56k             | 1/4W $\pm 5\%$ |
| R09    | R2EDSJ104A | Carbon 100k            | 1/4W $\pm 5\%$ |
| R10    | R2EDSJ683A | Carbon 68k             | 1/4W $\pm 5\%$ |
| R11    | R2EDSJ473A | Carbon 47k             | 1/4W $\pm 5\%$ |
| R12    | R2EDSJ222A | Carbon 2.2k            | 1/4W $\pm 5\%$ |
| R13    | R2EDSJ101A | Carbon 100             | 1/4W $\pm 5\%$ |
| R14    | R2EDSJ562A | Carbon 5.6k            | 1/4W $\pm 5\%$ |
| R15    | R2EDSJ822A | Carbon 8.2k            | 1/4W $\pm 5\%$ |
| R16    | R2EDSJ102A | Carbon 1k              | 1/4W $\pm 5\%$ |
| R17    | R2EDSJ123A | Carbon 12k             | 1/4W $\pm 5\%$ |
| R18    | R2EDSJ122A | Carbon 1.2k            | 1/4W $\pm 5\%$ |
| R19    | R2EDSJ184A | Carbon 180k            | 1/4W $\pm 5\%$ |
| R20    | R2EDSJ124A | Carbon 120k            | 1/4W $\pm 5\%$ |
| R21,22 | R2EDSJ222A | Carbon 2.2k            | 1/4W $\pm 5\%$ |
| R23    | R2EDSJ331A | Carbon 330             | 1/4W $\pm 5\%$ |
| R24    | R2EDSJ822A | Carbon 8.2k            | 1/4W $\pm 5\%$ |
| R25,26 | R2EDSJ332A | Carbon 3.3k            | 1/4W $\pm 5\%$ |
| R27    |            |                        |                |
| R28    | R2EDSJ101A | Carbon 100             | 1/4W $\pm 5\%$ |
| R29    | R3AXBJ680A | Oxide Metal Film 68 1W | $\pm 5\%$      |
| R30    | R2EDSJ332A | Carbon 3.3k            | 1/4W $\pm 5\%$ |
| R31    | R2EDSJ102A | Carbon 1k              | 1/4W $\pm 5\%$ |
| R32    | R2EDSJ332A | Carbon 3.3k            | 1/4W $\pm 5\%$ |
| R33    | R2EDSJ102A | Carbon 1k              | 1/4W $\pm 5\%$ |
| R34,35 | R2EDSJ103A | Carbon 10k             | 1/4W $\pm 5\%$ |
| R36    | R2EDSJ101A | Carbon 100             | 1/4W $\pm 5\%$ |
| R37    | R2EDSJ222A | Carbon 2.2k            | 1/4W $\pm 5\%$ |
| R38    | R2EDSJ332A | Carbon 3.3k            | 1/4W $\pm 5\%$ |
| R39,40 | R2EDSJ470A | Carbon 47              | 1/4W $\pm 5\%$ |
| R41    | R2EDSJ151A | Carbon 150             | 1/4W $\pm 5\%$ |
| R42    | R2EDSJ477A | Carbon 4.7             | 1/4W $\pm 5\%$ |
| R43    | R2EDSJ273A | Carbon 27k             | 1/4W $\pm 5\%$ |
| R44    | R2EDSJ681A | Carbon 680             | 1/4W $\pm 5\%$ |
| R45    | R2EDSJ272A | Carbon 2.7k            | 1/4W $\pm 5\%$ |
| R46    | R2EDSJ222A | Carbon 2.2k            | 1/4W $\pm 5\%$ |
| R47    | R2EDSJ101A | Carbon 100             | 1/4W $\pm 5\%$ |
| R48    | R2EDSJ563A | Carbon 56k             | 1/4W $\pm 5\%$ |
| R49    | R2EDSJ472A | Carbon 4.7k            | 1/4W $\pm 5\%$ |
| R50    | R2EDSJ103A | Carbon 10k             | 1/4W $\pm 5\%$ |
| R51    | R2EDSJ103A | Carbon 10k             | 1/4W $\pm 5\%$ |
| R52    | R2EDSJ472A | Carbon 4.7k            | 1/4W $\pm 5\%$ |

| TRANSISTOR DC VOLTAGES |        |       |       |       |
|------------------------|--------|-------|-------|-------|
| SYMBOL NO.             | DEVICE | B     | C     | E     |
| Q01                    | 2SC536 | 1.09V | 0.56V | 0.56V |
| Q02                    | 2SA659 | 5.33V | 5.36V | 6.12V |
| Q03,04                 | 2SC536 | 0V    | 0V    | 0V    |
| Q05                    | 2SC536 | 0.03V | 3.78V | 0V    |

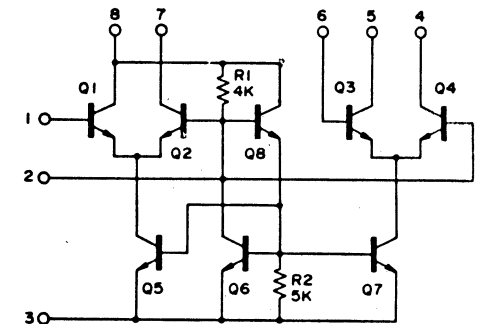
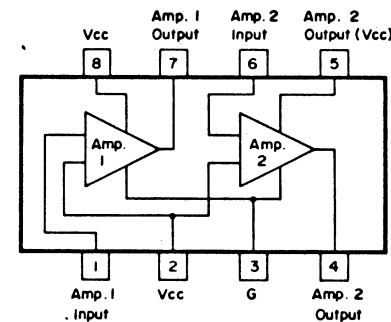
## FM TUNER SECTION CHARACTERISTIC CURVE



## AM RF IF IC HA1138 SIGNAL FLOW



## FM IF IC LA1222 SIGNAL FLOW AND EQUIVALENT DIAGRAM



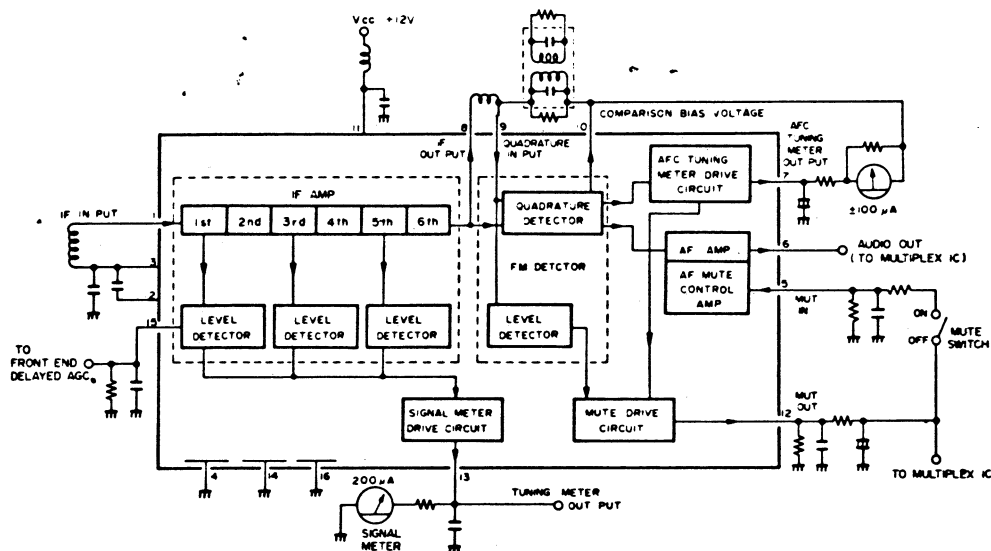
Signal enters R.F. AMP of I.C. where it is amplified. The converter section consists of a mixer and a local oscillator. The output of the mixer stage contains two frequency components.

The 455 KHz component signal is then fed to the I.F. amplifier. The tuned Frequency of the I.F. filter is 455 KHz. When the I.F. signal appears at the low pass filter, the 455-KHz carrier component is then locked, allowing only its audio component to pass.

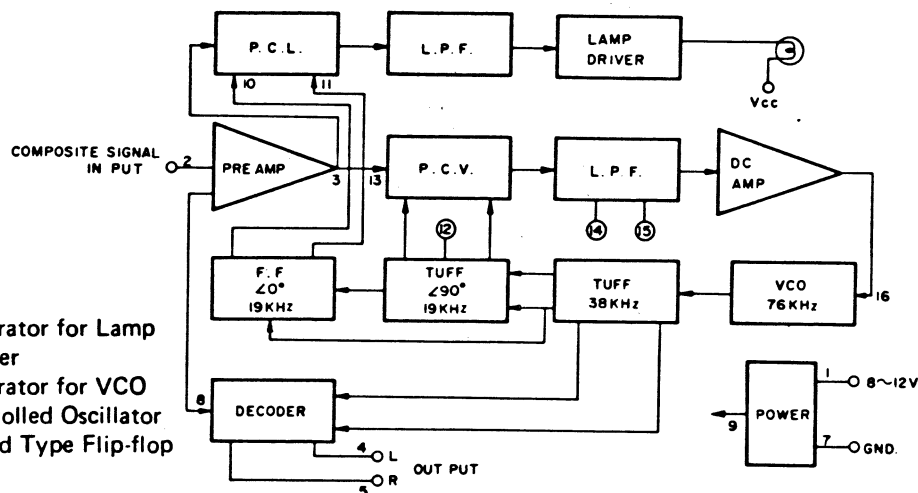
The circuit contains two steps of an independent differential amplification circuit, although the LA1222 is rated to operate on 12-volt power, it can also be used at low voltage, it also permits desired current limitation through insertion of a resistor between pins (2) and (8).

The limiting action by this circuit has current-limiting type limiter characteristics. The advantages that the current limiting type limiter are: It improves capture ratio against input variation, it does not deviate center frequency, etc.

# FM IF IC LA1230 SIGNAL FLOW



# FM MPX IC LA3350 SIGNAL FLOW



P. C. L. : Phase Comparator for Lamp  
 L. P. F. : Low Pass Filter  
 P. C. V. : Phase Comparator for VCO  
 VCO : Voltage controlled Oscillator  
 TUFF : Direct coupled Type Flip-flop

The function of LA3350 is divided into two sections; the PLL section that reproduces the 38 KHz subcarrier, and the decoder section that switches the composite signal. The phase-duty cycle stability of the switching signal reproduced by the PLL determines the separation and the distortion factor of the demodulated signal. The phase comparator detects the phase difference between the VCO oscillator signal and the pilot signal. The detected output is in turn used as the control signal for the VCO.

Since higher harmonics are contained in this phase difference signal, it is necessary that a loop filter be used to eliminate these harmonics. The resulting DC component is applied to the VCO as the control signal. The characteristics of the loop filter practically determines the characteristics of the PLL. Stability of the signal synchronized to the input cannot be obtained unless the VCO itself is stable.

Here, only the demodulator circuit is essential as the FM stereo multiplex demodulator. The other components are the PLL as the 19 KHz selective circuit, and the stereo broadcast indicator circuit. The functions of these components are briefly described below.

The voltage controlled oscillator generates a saw-tooth wave of 76 KHz, and is frequency-controlled by the output from the DC amplifier. The frequency of the DC amplifier output is reduced to half, or 38 KHz, by means of a direct-coupled flip-flop circuit FF-1. This 38 KHz signal is applied to the demodulator circuit and demodulates the stereo composite signal. The FF-1 output is again reduced to 19 KHz by another direct-coupled flip-flop circuit FF-2.

This FF-2 output is then applied to a phase comparator, PC-1, and its phase is compared with that of the pilot signal contained in the input signal. The output from the FF-3 is 19 KHz and 90 degrees lagging in phase behind that of the FF-2 output. It is then applied to another phase comparator, PC-2, where the 19 KHz component of the input signal is detected and fed to the stereo broadcast indicator circuit to activate the pilot lamp.

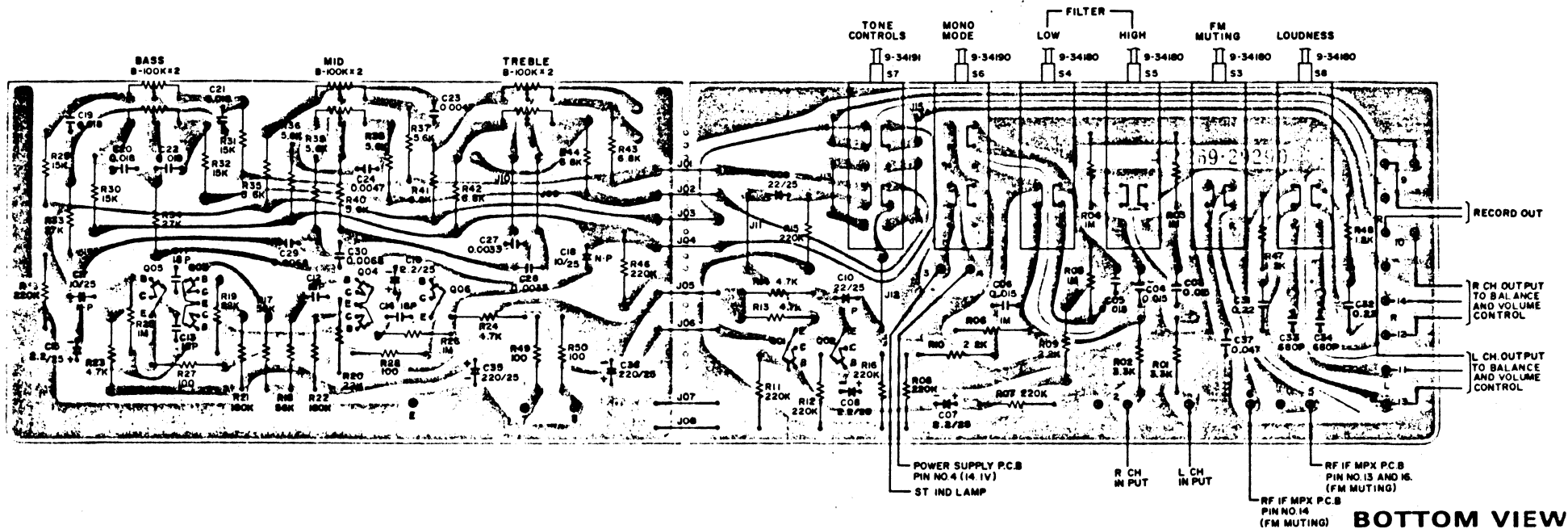
# PARTS LIST

PRE TONE PCB Assy  
1310 4001 73200

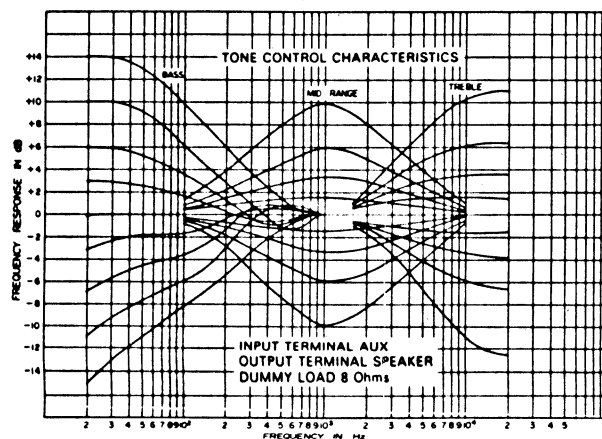
| Ref. No.          | Part Number  | Description                            |
|-------------------|--------------|--|
|                   | 4 2229 25390 | VR B-100kx2 (RS-1040)                  |
| S03               | 4 2319 34180 | SW Lever FM Muting                     |
| S04               | 4 2319 34180 | SW Lever Low Filter                    |
| S05               | 4 2319 34180 | SW Lever High Filter                   |
| S06               | 4 2319 34190 | SW Lever Mono Mode                     |
| S07               | 4 2319 34191 | SW Lever Tone Controls                 |
| S08               | 4 2319 34180 | SW Lever Loudness                      |
| <b>CAPACITORS</b> |              |  |
| C03,04            | C1HFAK153A   | Mylar 0.015 $\mu$ F 50V $\pm 10\%$     |
| 05,06             |              |  |
| C07,08            | C1EUEM225A   | Alsicon 2.2 $\mu$ F 25V $\pm 20\%$     |
| C09,10            | C1EAEN226A   | Electrolytic 22 $\mu$ F 25V $\pm 30\%$ |
| C11,12            | C1HCDK180SL  | Ceramic 18pF 50V $\pm 10\%$            |
| 13,14             |              |  |
| C15,16            | C1EUEM225A   | Alsicon 2.2 $\mu$ F 25V $\pm 20\%$     |
| C17,18            | C1EAEN106A   | Electrolytic 10 $\mu$ F 25V $\pm 30\%$ |
| C19,20            | C1HRK183A    | Mylar 0.018 $\mu$ F 50V $\pm 10\%$     |
| 21,22             |              |  |
| C23,24            | C1HFRK472A   | Mylar 0.0047 $\mu$ F 50V $\pm 10\%$    |
| C27,28            | C1HFRK332A   | Mylar 0.0033 $\mu$ F 50V $\pm 10\%$    |
| C29,30            | C1HFRK682A   | Mylar 0.0068 $\mu$ F 50V $\pm 10\%$    |
| C31,32            | C1HFRK224A   | Mylar 0.22 $\mu$ F 50V $\pm 10\%$      |
| C33,34            | C1HYDK681R   | Ceramic 680pF 50V $\pm 10\%$           |
| C35,36            | C1ERE-227A   | Electrolytic 220 $\mu$ F 25V           |
| C37               | C1HYDZ473A   | Ceramic 0.047 $\mu$ F 50V +80, -20 %   |

| Ref. No.              | Part Number     | Description                |
|-----------------------|-----------------|----------------------------|
| <b>SEMICONDUCTORS</b> |                 |                            |
| Q01,02                | 2035 5151 57079 | TR 2SC1570 LG              |
| 05,06                 |                 |                            |
| Q03,04                | TMM-2SA798-F    | TR 2SA798 F                |
| <b>RESISTORS</b>      |                 |                            |
| R01,02                | R2EDVJ332A      | Carbon 3.3k 1/4W $\pm 5\%$ |
| R03,04                | R2EDVJ105A      | Carbon 1M 1/4W $\pm 5\%$   |
| 05,06                 |                 |                            |
| R07,08                | R2EDVJ224A      | Carbon 220k 1/4W $\pm 5\%$ |
| R09,10                | R2EDVJ222A      | Carbon 2.2k 1/W $\pm 5\%$  |
| R11,12                | R2EDVJ224A      | Carbon 220k 1/4W $\pm 5\%$ |
| R13,14                | R2EDVJ472A      | Carbon 4.7k 1/4W $\pm 5\%$ |
| R15,16                | R2EDVJ224A      | Carbon 220k 1/4W $\pm 5\%$ |
| R17,18                | R2EDVJ563A      | Carbon 56k 1/4W $\pm 5\%$  |
| R19,20                | R2EDVJ223A      | Carbon 22k 1/4W $\pm 5\%$  |
| R21,22                | R2EDVJ184A      | Carbon 180k 1/4W $\pm 5\%$ |
| R23,24                | R2EDVJ472A      | Carbon 4.7k 1/4W $\pm 5\%$ |
| R25,26                | R2EDVJ105A      | Carbon 1M 1/4W $\pm 5\%$   |
| R27,28                | R2EDVJ101A      | Carbon 100 1/4W $\pm 5\%$  |
| R29,30                | R2EDVJ153A      | Carbon 15k 1/4W $\pm 5\%$  |
| 31,32                 |                 |                            |
| R33,34                | R2EDVJ273A      | Carbon 27k 1/4W $\pm 5\%$  |
| R35,36                | R2EDVJ562A      | Carbon 5.6K 1/4W $\pm 5\%$ |
| 37,38                 |                 |                            |
| 39,40                 |                 |                            |
| R41,42                | R2EDVJ682A      | Carbon 6.8K 1/4W $\pm 5\%$ |
| 43,44                 |                 |                            |
| R45,46                | R2EDVJ224A      | Carbon 220K 1/4W $\pm 5\%$ |
| R47,48                | R2EDVJ122A      | Carbon 1.2K 1/4W $\pm 5\%$ |
| R49,50                | R2EDVJ101A      | Carbon 100 1/4W $\pm 5\%$  |

# TONE CONTROL AND MODE SELECTOR P.C.BOARD

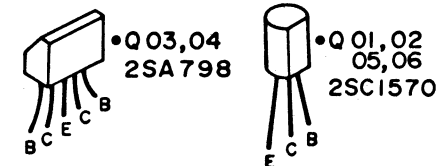


## CHARACTERISTIC CURVE

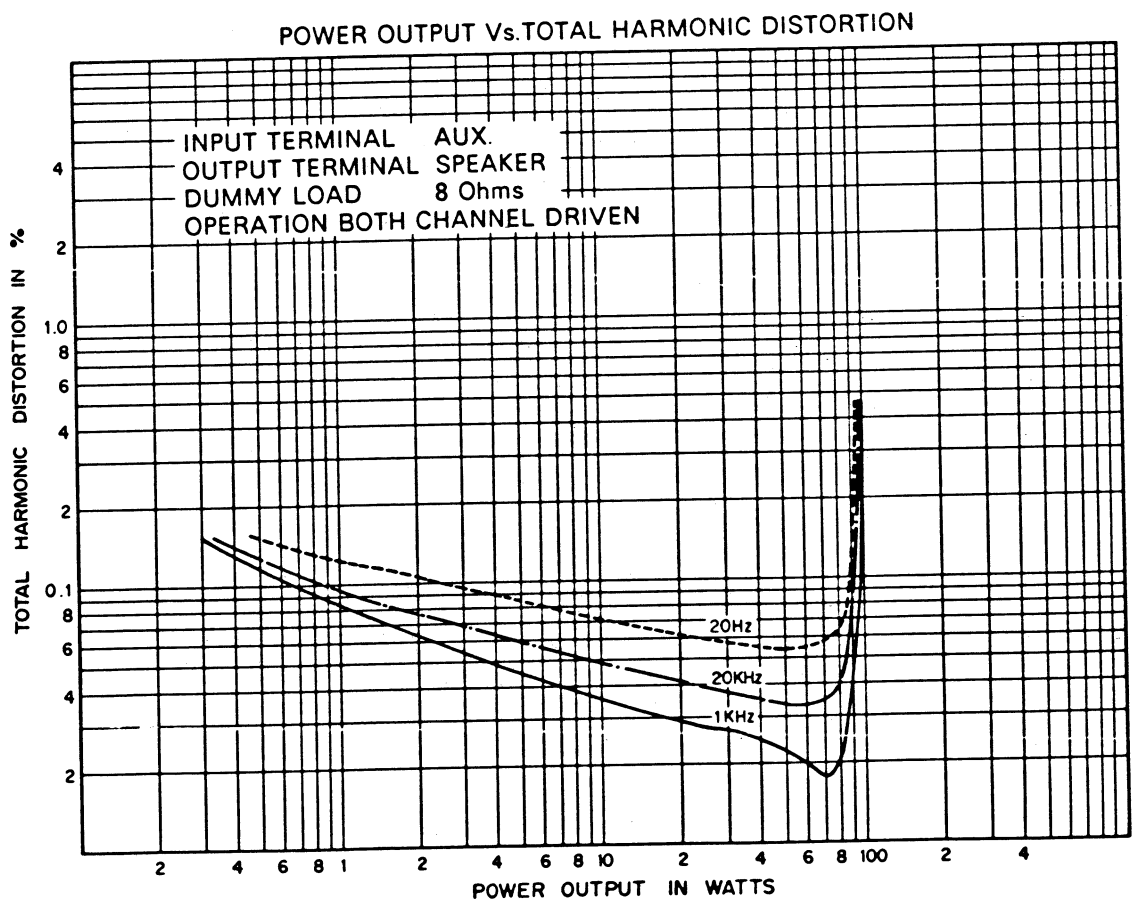
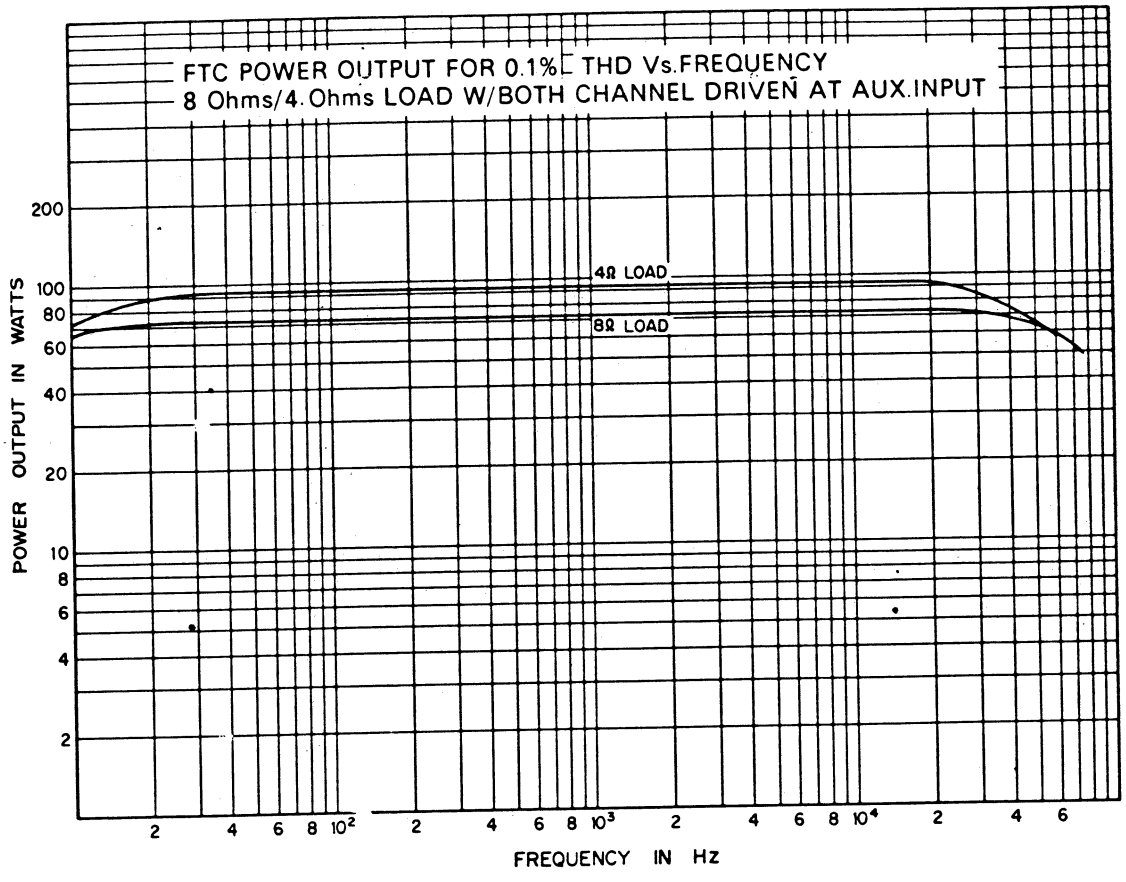


| TRANSISTOR DC VOLTAGES |         |        |        |        |        |        |
|------------------------|---------|--------|--------|--------|--------|--------|
| SYMBOL NO.             | DEVICE  | B      | C      | E      | 1C     | B      |
| Q01,02                 | ZSC1570 | -1.55V | 19.8V  | -22V   |        |        |
| Q03,04                 | ZSA798  | 0.00V  | -17.9V | 0.07V  | -18.9V | 0.015V |
| Q05,06                 | ZSC1570 | -17.9V | -0.1V  | -18.4V |        |        |

## TRANSISTOR FRONT VIEW



# POWER AMPSECTION CHARACTERISTIC CURVE



# PARTS LIST

POWER AMP PCB Assy  
1310 4001 72803

| Ref. No. | Part Number  | Description    |
|----------|--------------|----------------|
| L01,02   | 4 2539 20281 | Coil 2 $\mu$ H |
| VR01,02  | 4 2229 25500 | VR B-330x1     |

## CAPACITORS

|        |             |                          |     |             |
|--------|-------------|--------------------------|-----|-------------|
| C01,02 | C1EUEM 225A | Alsicon 2.2 $\mu$ F      | 25V | $\pm 20\%$  |
| C03,04 | C1HCDK151SL | Ceramic 150pF            | 50V | $\pm 10\%$  |
| C05,06 | C1HCDD100SL | Ceramic 10pF             | 50V | $\pm 0.5\%$ |
| C07,08 | C1ERB-227A  | Electrolytic 220 $\mu$ F | 25V |             |
| 09,10  |             |                          |     |             |
| C11,12 | C1EUEM225A  | Alsicon 2.2 $\mu$ F      | 25V | $\pm 20\%$  |
| C13,14 | C1HCDD100SL | Ceramic 10pF             | 50V | $\pm 0.5\%$ |
| 15,16  |             |                          |     |             |
| C17,18 | C1EUEM474A  | Alsicon 0.47 $\mu$ F     | 25V | $\pm 20\%$  |
| C19,20 | C1HCDK471SL | Ceramic 470pF            | 50V | $\pm 10\%$  |
| C21,22 | C1ERB-106A  | Electrolytic 10 $\mu$ F  | 25V |             |
| C23,24 | C1HCDK270SL | Ceramic 27pF             | 50V | $\pm 10\%$  |
| 26     |             |                          |     |             |
| C27,28 | C1HRB-227A  | Electrolytic 220 $\mu$ F | 50V |             |
| 29,30  |             |                          |     |             |
| C31,32 | C1HFRM153A  | Mylar 0.015 $\mu$ F      | 50V | $\pm 20\%$  |
| 33,34  |             |                          |     |             |
| C35,36 | C1HFRM104A  | Mylar 0.1 $\mu$ F        | 50V | $\pm 20\%$  |

## SEMICONDUCTORS

|        |                 |               |
|--------|-----------------|---------------|
| D01,02 | DJJ-WZ-210      | Diode WZ-210  |
| 03,04  |                 |               |
| D05,06 | 2055 9040 44210 | Diode DS-442  |
| 07,08  |                 |               |
| 09,10  |                 |               |
| 11,12  |                 |               |
| 13,14  |                 |               |
| 15,16  |                 |               |
| Q01,02 | TMM-2SA798--F   | TR 2SA798 F   |
| Q03,04 | 2035 5151 57079 | TR 2SA1570 LG |
| Q05,06 | TMM-2SA798--F   | TR 2SA798 F   |
| Q07,08 | 2035 4900 60040 | TR 2SD600 D   |
| Q09,10 | 2035 4910 63140 | TR 2SB631 D   |
| 11,12  | 2035 4900 60040 | TR 2SD600 D   |
| Q13,14 | 2035 6701 17550 | TR 2SC1175 E  |
| Q15,16 | 2035 6800 65950 | TR 2SA659 E   |
| Q17,18 | TMM-2SD358--D   | TR 2SD358 D   |
| Q19,20 | TMM-2SB528--D   | TR 2SB528 D   |

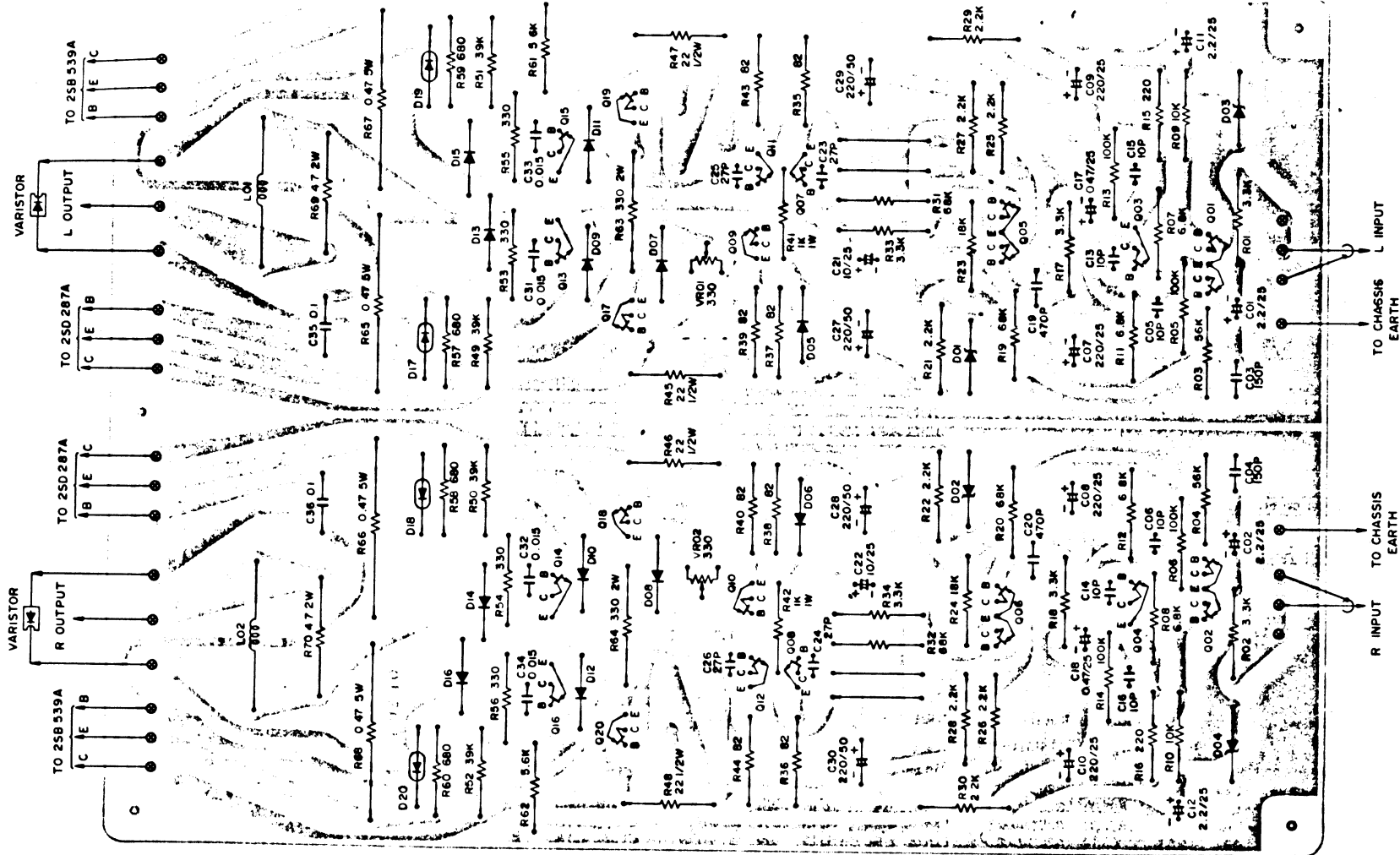
| Ref. No. | Part Number | Description |
|----------|-------------|-------------|
|----------|-------------|-------------|

## RESISTORS

|        |            |                         |                 |
|--------|------------|-------------------------|-----------------|
| R01,02 | R2EDVJ332A | Carbon 3.3k             | 1/4W $\pm 5\%$  |
| R03,04 | R2EDVJ563A | Carbon 56k              | 1/4W $\pm 5\%$  |
| R05,06 | R2EDVJ104A | Carbon 100k             | 1/4W $\pm 5\%$  |
| R07,08 | R2EDVJ682A | Carbon 6.8k             | 1/4W $\pm 5\%$  |
| R09,10 | R2EDVJ103A | Carbon 10k              | 1/4W $\pm 5\%$  |
| R11,12 | R2EDVJ682A | Carbon 6.8k             | 1/4W $\pm 5\%$  |
| R13,14 | R2EDVJ104A | Carbon 100k             | 1/4W $\pm 5\%$  |
| R15,16 | R2EDVJ221A | Carbon 220              | 1/4W $\pm 5\%$  |
| R17,18 | R2EDVJ332A | Carbon 3.3k             | 1/4W $\pm 5\%$  |
| R19,20 | R2EDVJ683A | Carbon 68k              | 1/4W $\pm 5\%$  |
| R21,22 | R2EDVJ222A | Carbon 2.2k             | 1/4W $\pm 5\%$  |
| R23,24 | R2EDVJ183A | Carbon 18k              | 1/4W $\pm 5\%$  |
| R25,26 | R2EDVJ222A | Carbon 2.2k             | 1/4W $\pm 5\%$  |
| 27,28  |            |                         |                 |
| 29,30  |            |                         |                 |
| R31,32 | R2EDVJ683A | Carbon 68k              | 1/4W $\pm 5\%$  |
| R33,34 | R2EDVJ332A | Carbon 3.3k             | 1/4W $\pm 5\%$  |
| R35,36 | R2EDVJ820A | Carbon 82               | 1/4W $\pm 5\%$  |
| 37,38  |            |                         |                 |
| 39,40  |            |                         |                 |
| R41,42 | R3AXBJ102A | Oxide Metal Film 1k 1W  | $\pm 5\%$       |
| R43,44 | R2EDVJ820A | Carbon 82               | 1/4W $\pm 5\%$  |
| R45,46 | R2HZPK220A | Fuse 22                 | 1/2W $\pm 10\%$ |
| 47,48  |            |                         |                 |
| R49,50 | R2EDVJ393A | Carbon 39k              | 1/4W $\pm 5\%$  |
| 51,52  |            |                         |                 |
| R53,54 | R2EDVJ331A | Carbon 330              | 1/4W $\pm 5\%$  |
| 55,56  |            |                         |                 |
| R57,58 | R2EDVJ681A | Carbon 680              | 1/4W $\pm 5\%$  |
| 59,60  |            |                         |                 |
| R61,62 | R2EDVJ562A | Carbon 5.6k             | 1/4W $\pm 5\%$  |
| R63,64 | R3DXBJ331A | Oxide Metal Film 330 2W | $\pm 5\%$       |
| R65,66 | R3HEPKR47A | Cement 0.47             | 5W $\pm 10\%$   |
| 67,68  |            |                         |                 |
| R69,70 | R3DXBJ4R7A | Oxide Metal Film 4.7 2W | $\pm 5\%$       |



# POWER AMP P.C. BOARD



| TRANSISTOR DC VOLTAGES |         |        |        |        |        |        |            |         |         |        |        |
|------------------------|---------|--------|--------|--------|--------|--------|------------|---------|---------|--------|--------|
| SYMBOL NO              | DEVICE  | B      | C      | E      | C      | B      | SYMBOL NO. | DEVICE  | B       | C      | E      |
| Q01,02                 | 2SA798  | 0.012V | -19.4V | 0.59V  | -20.9V | 0.01V  | Q11,12     | 2SD600  | -51.2V  | -1.21V |        |
| Q03,04                 | 2SC1570 | -19.4V | -0.03V | -20.6V |        |        | Q13,14     | 2SC1175 | 0.292V  | 0.95V  | -0.94V |
| Q05,06                 | 2SA798  | 0.069V | -42.5V | 0.688V | -42.5V | 0.075V | Q15,16     | 2SA659  | -0.292V | -0.78V | -0.94V |
| Q07,08                 | 2SD600  | -51.7V | -31.9V | -52.1V |        |        | Q17,18     | 2SD358  | 1.18V   | 53.9V  | 0.2V   |
| Q09,10                 | 2SB631  | 52.1V  | 1.18V  | 43.3V  |        |        | Q19,20     | 2SB528  | -1.21V  | -53.9V | -0.6V  |

TRANSISTOR FRONT VIEW



• Q01,02  
05,06  
2SA798



• Q03,04  
2SC1570  
• Q13,14  
2SC1175  
• Q15,16  
2SA659

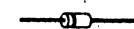


• Q07,08  
11,12  
2SD6000  
• Q09,10  
2SB631D



• Q17,18  
2SD358  
• Q19,20  
2SB528

BOTTOM VIEW  
DIODE FRONT VIEW

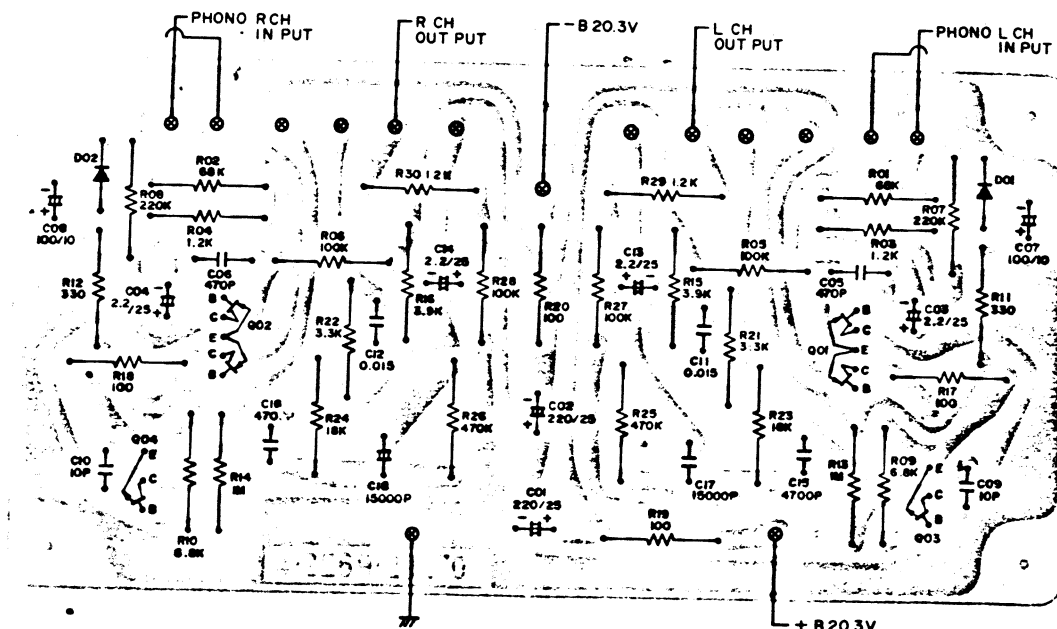


• D01-04 WZ 210  
• D05-16 DS-442

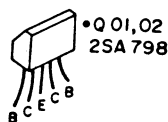


• D17-20 SV-04

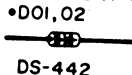
# EQ P.C. BOARD



TRANSISTOR FRONT VIEW



DIODE FRONT VIEW



## BOTTOM VIEW

| TRANSISTOR DC VOLTAGES |         |        |        |        |        |       |
|------------------------|---------|--------|--------|--------|--------|-------|
| SYMBOL NO.             | DEVICE  | B      | C      | E      | C      | B     |
| Q01,02                 | 2SA798  | 0.45V  | -18.7V | 0.61V  | -19.3V | 0.05V |
| Q03,04                 | 2SC1570 | -18.7V | -0.04V | -18.8V |        |       |

## PARTS LIST

EQ PCB Assy  
1310 4001 73101

Ref. No. Part Number Description

### CAPACITORS

|        |             |                                    |
|--------|-------------|------------------------------------|
| C01,02 | C1ERE-227A  | Electrolytic 220 $\mu$ F 25V       |
| C03,04 | C1EUEM225A  | Alsicon 2.2 $\mu$ F 25V $\pm 20\%$ |
| C05,06 | C1HCDK471SL | Ceramic 470pF 50V $\pm 10\%$       |
| C07,08 | C1ARE-107A  | Electrolytic 100 $\mu$ F 10V       |
| C09,10 | C1HCSD100SL | Ceramic 10pF 50V $\pm 0.5\%$       |
| C11,12 | C1HFRM273A  | Mylar 0.015 $\mu$ F 50V $\pm 20\%$ |
| C13,14 | C1EUEM225A  | Alsicon 2.2 $\mu$ F 25V $\pm 20\%$ |
| C15,16 | C1HSEJ472A  | Styrol 4700pF 50V $\pm 5\%$        |
| C17,18 | C1HSEJ153A  | Styrol 15000pF 50V $\pm 5\%$       |

### SEMICONDUCTORS

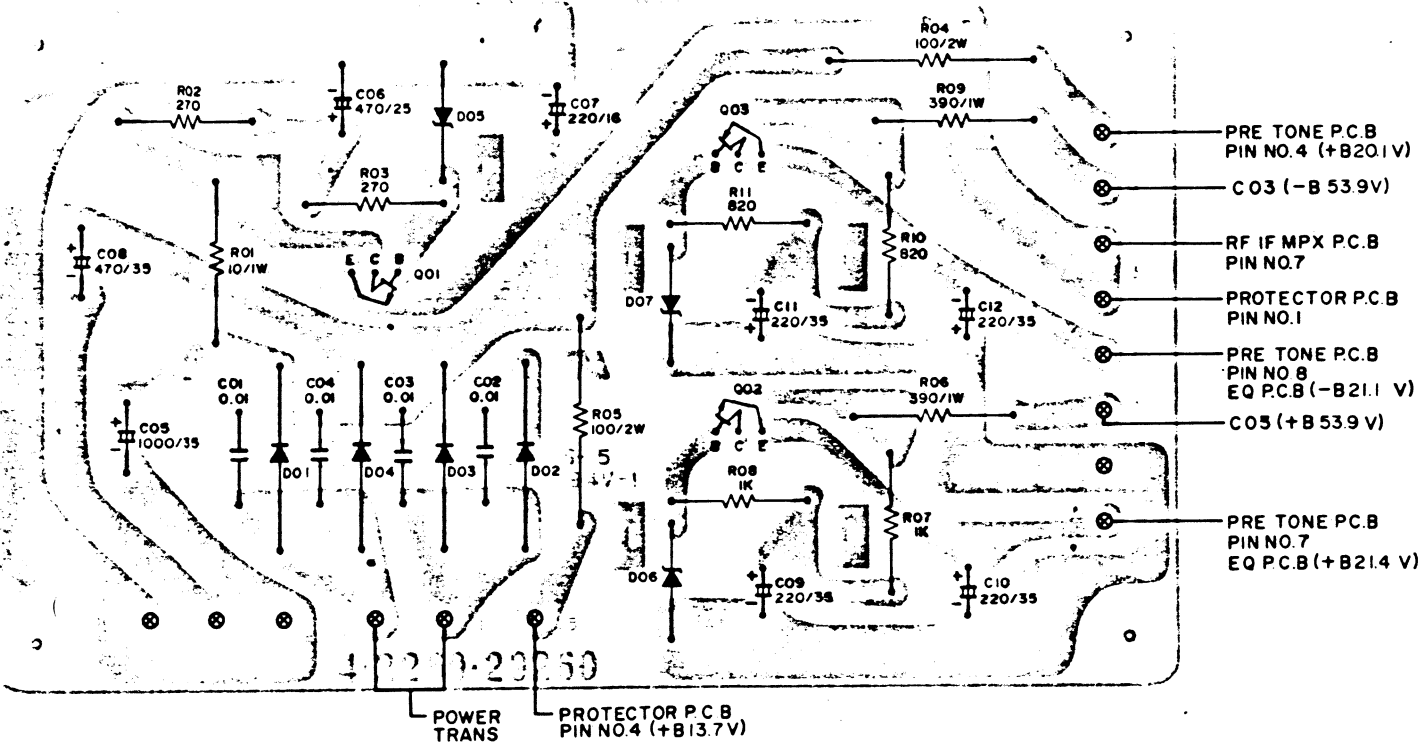
|        |                 |               |
|--------|-----------------|---------------|
| D01,02 | 2055 9040 44210 | Diode DS-442  |
| Q01,02 | TMM-2SA798-F    | TR 2SA798 F   |
| Q03,04 | 2035 5151 57079 | TR 2SC1570 LG |

Ref. No. Part Number Description

### RESISTORS

|        |            |             |                |
|--------|------------|-------------|----------------|
| R01,02 | R2EDVJ683A | Carbon 68k  | 1/4W $\pm 5\%$ |
| R03,04 | R2EDVJ122A | Carbon 1.2k | 1/4W $\pm 5\%$ |
| R05,06 | R2EDVJ104A | Carbon 100k | 1/4W $\pm 5\%$ |
| R07,08 | R2EDVJ224A | Carbon 220k | 1/4W $\pm 5\%$ |
| R09,10 | R2EDVJ682A | Carbon 6.8k | 1/4W $\pm 5\%$ |
| R11,12 | R2EDVJ331A | Carbon 330  | 1/4W $\pm 5\%$ |
| R13,14 | R2EDVJ105A | Carbon 1M   | 1/4W $\pm 5\%$ |
| R15,16 | R2EDVJ392A | Carbon 3.9k | 1/4W $\pm 5\%$ |
| R17,18 | R2EDVJ101A | Carbon 100  | 1/4W $\pm 5\%$ |
| R19,20 |            |             |                |
| R21,22 | R2EDVJ332A | Carbon 3.3k | 1/4W $\pm 5\%$ |
| R23,24 | R2EDVJ183A | Carbon 18k  | 1/4W $\pm 5\%$ |
| R25,26 | R2EDVJ474A | Carbon 470k | 1/4W $\pm 5\%$ |
| R27,28 | R2EDVJ104A | Carbon 100k | 1/4W $\pm 5\%$ |
| R29,30 | R2EDVJ122A | Carbon 1.2k | 1/4W $\pm 5\%$ |

# POWER SUPPLY P.C.BOARD



| TRANSISTOR DC VOLTAGES |        |        |        |        |
|------------------------|--------|--------|--------|--------|
| SYMBOL NO.             | DEVICE | B      | C      | E      |
| Q01                    | 2SD330 | 13.0V  | 18.9V  | 12.41V |
| Q02                    | 2SD330 | 22.0V  | 39.7V  | 21.4V  |
| Q03                    | 2SB514 | -21.7V | -39.9V | -21.1V |

## BOTTOM VIEW

TRANSISTOR FRONT VIEW



- Q 01, 02  
2SD 330
- Q 03  
2SB514

DIODE FRONT VIEW



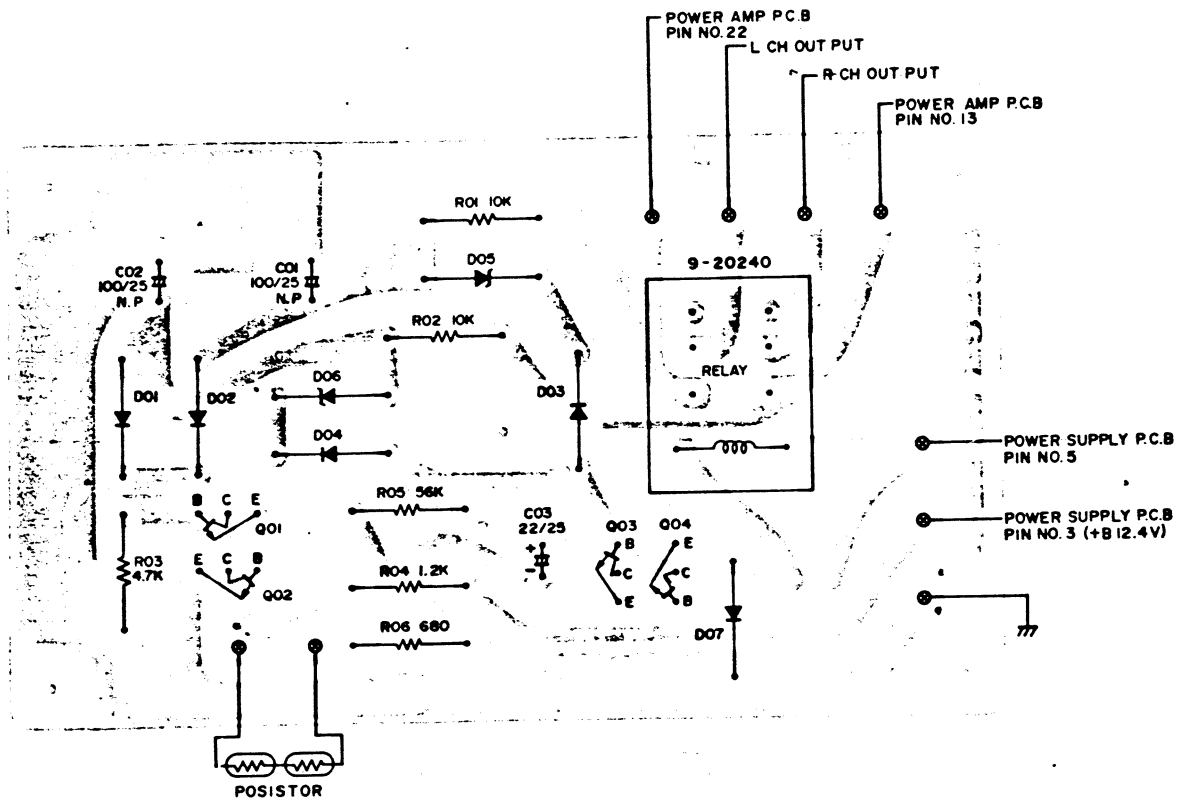
- D05 WZ 130
- D06,07 WZ 210
- D01~04 DS130

## PARTS LIST

POWER SUPPLY PCB Assy  
310 4001 73002

| Ref. No.              | Part Number     | Description                         | Ref. No.         | Part Number | Description                       |
|-----------------------|-----------------|-------------------------------------|------------------|-------------|-----------------------------------|
| <b>CAPACITORS</b>     |                 |                                     | <b>RESISTORS</b> |             |                                   |
| 01,02                 | C2HYDP103A      | Ceramic 0.01 $\mu$ F 500V +100,-0 % | R01              | R3AXB100A   | Oxide Metal Film 10 1W $\pm$ 5 %  |
| 03,04                 |                 |                                     | R02,03           | R2EDVJ271A  | Carbon 270 1/4W $\pm$ 5 %         |
| 05                    | C1VRE-108A      | Electrolytic 1000 $\mu$ F 35V       | R04,05           | R3DXBJ101A  | Oxide Metal Film 100 2W $\pm$ 5 % |
| 06                    | C1ERE-477A      | Electrolytic 470 $\mu$ F 25V        | R06,09           | R3AXB1391A  | Oxide Metal Film 390 1W $\pm$ 5 % |
| 07                    | C1CRE-227A      | Electrolytic 220 $\mu$ F 16V        | R07,08           | R2EDVJ102A  | Carbon 1K 1/4W $\pm$ 5 %          |
| 08                    | C1VRE-477A      | Electrolytic 470 $\mu$ F 35V        | 10,11            |             |                                   |
| 09,10                 | C1VRE-227A      | Electrolytic 220 $\mu$ F 35V        |                  |             |                                   |
| 11,12                 |                 |                                     |                  |             |                                   |
| <b>SEMICONDUCTORS</b> |                 |                                     |                  |             |                                   |
| 01,02                 | 2025 2310 13020 | Diode DS130YD                       |                  |             |                                   |
| 03,04                 |                 |                                     |                  |             |                                   |
| 05                    | DJJ-WZ-130      | Diode WZ-130                        |                  |             |                                   |
| 06,07                 | DJJ-WZ-210      | Diode WZ-210                        |                  |             |                                   |
| 01,02                 | 2035 8220 33050 | TR 2SD330 E                         |                  |             |                                   |
| 03                    | 2035 6460 51440 | TR 2SB514 D                         |                  |             |                                   |

# PROTECTOR P.C.BOARD



## BOTTOM VIEW

TRANSISTOR DC VOLTAGES

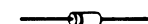
| SYMBOL NO. | DEVICE  | B      | C     | E      |
|------------|---------|--------|-------|--------|
| Q01        | 2SC536  | 0.02V  | 5.55V | 0.045V |
| Q02        | 2SC536  | 0.045V | 5.55V | 0V     |
| Q03        | 2SC536  | 2.16V  | 1.62V | 1.5V   |
| Q04        | 2SC1175 | 1.5V   | 1.62V | 0.74V  |

TRANSISTOR FRONT VIEW



- Q01 ~ 03 2SC536
- Q04 2SC1175

DIODE FRONT VIEW



- D01~04 DS-442
- D05,06 RD-6.2E
- D07 DS-130

## PARTS LIST

PROTECTOR PCB Assy  
1310 4001 72900

Ref. No. Part Number Description

4 2329 20240 Relay

### CAPACITORS

C01,02 C1EAEN107A Electrolytic 100  $\mu$ F 25V  $\pm 30\%$   
C03 C1ERE-226A Electrolytic 22  $\mu$ F 25V

### SEMICONDUCTORS

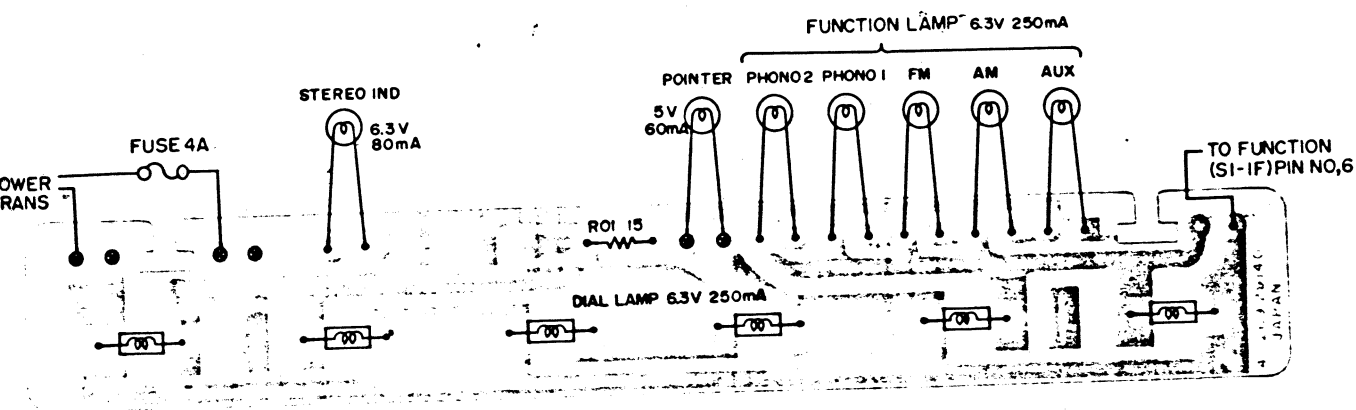
D01,02 2055 9040 44210 Diode DS-442  
03,04  
D05,06 DNN-RD6.2E Diode RD-6.2 E  
D07 2025 2310 13020 Diode DS130 YD  
Q01,02 2035 5100 53650 TR 2SC536 E  
03  
Q04 2035 6701 17550 TR 2SC1175 E

Ref. No. Part Number Description

### RESISTORS

R01,02 R2EDVJ103A Carbon 10k 1/4W  $\pm 5\%$   
R03 R2EDVJ472A Carbon 4.7k 1/4W  $\pm 5\%$   
R04 R2EDVJ122A Carbon 1.2k 1/4W  $\pm 5\%$   
R05 R2EDVJ563A Carbon 56k 1/4W  $\pm 5\%$   
R06 R2EDVJ681A Carbon 680 1/4W  $\pm 5\%$

# DIAL LAMP P.C. BOARD



## BOTTOM VIEW

## PARTS LIST

DIAL LAMP PCB Assy  
1310 4001 72163

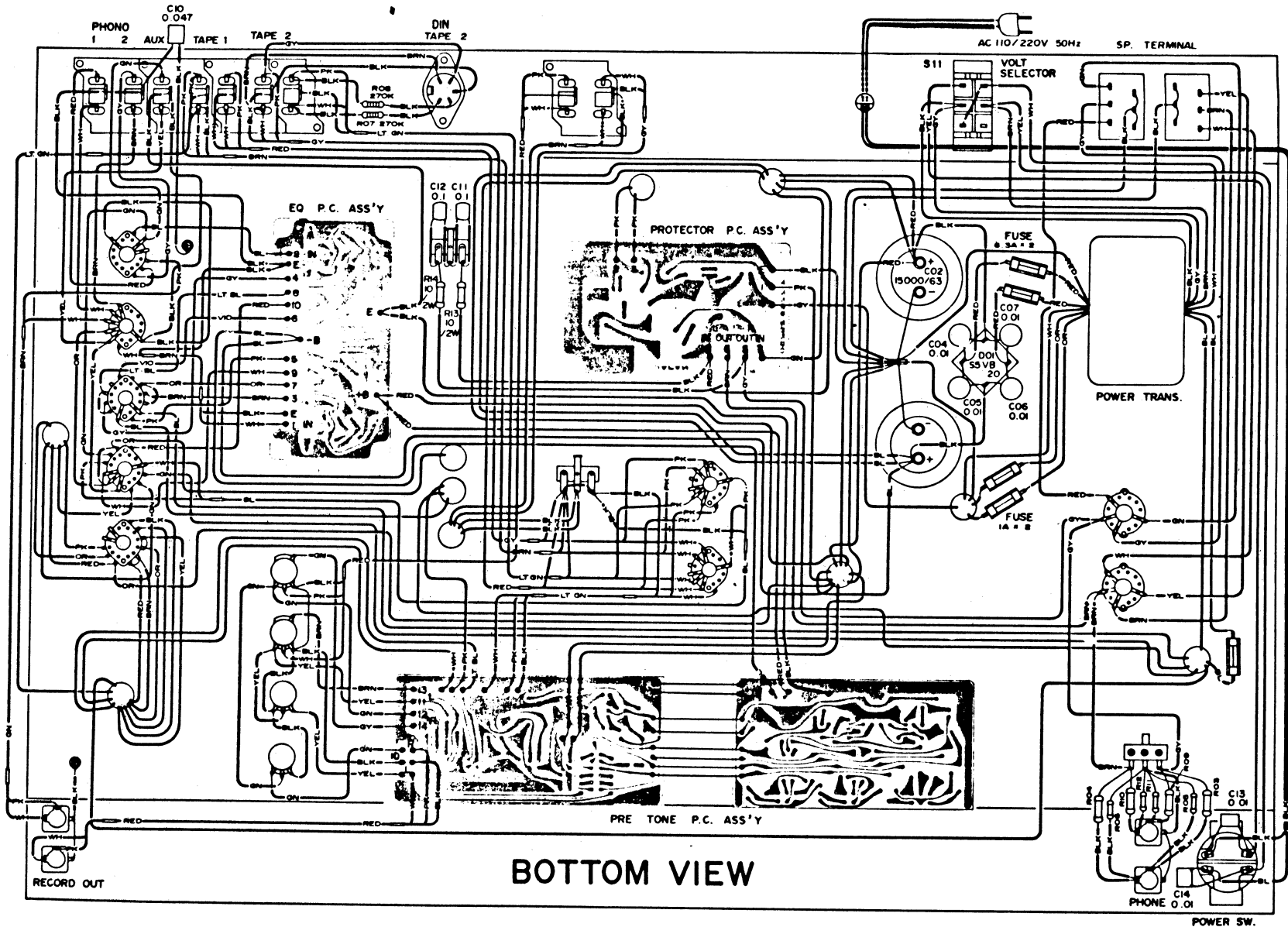
| Ref. No. | Part Number  | Description                       |
|----------|--------------|-----------------------------------|
|          | 4 2359 20930 | Lamp Holder                       |
| 63       | 4 6129 20219 | Small Lamp IND 6.3V 80mA          |
|          | 4 6129 20280 | Pilot Lamp 6.3V 250mA (Dial Lamp) |
|          |              | (Function Lamps)                  |
| 81-1     | 4 6129 20430 | Pilot Lamp 6.3V 80mA              |
| 81-2     | 4 6129 20431 | Pilot Lamp 6.3V 80mA              |
| 81-3     | 4 6129 20432 | Pilot Lamp 6.3V 80mA              |
| 81-4     | 4 6129 20216 | Pilot Lamp 6.3V 80mA              |
| 81-5     | 4 6129 20433 | Pilot Lamp 6.3V 80mA              |

### RESISTORS

| Ref. No. | Part Number | Material  | Value      |
|----------|-------------|-----------|------------|
| R01      | R2EDSJ150A  | Carbon 15 | 1/4W ± 5 % |



# POINT TO POINT WIRING DIAGRAM



RS-1058





## NOTES

### PACKING PARTS LIST

| Part Number     | Description          |
|-----------------|----------------------|
| 1316 1139 61103 | Box Corrugate-EXP    |
| 1316 2119 01351 | Bag Polyethylene-EXP |
| 1316 2119 01470 | Bag Polyethylene-EXP |
| 1316 3009 22150 | Pad (Right)          |
| 1316 3009 22160 | Pad (Left)           |

### ACCESSORIES PARTS LIST

| Part Number     | Description                 |
|-----------------|-----------------------------|
| 1316 4119 59005 | Explanatory Booklet English |
| 1316 4119 59007 | Explanatory Booklet German  |
| 1316 4519 14700 | Guarantee Certificate       |
| 4 2449 20230    | Antenna FM                  |